

LING 5050 – Introduction

Marie-Catherine de Marneffe
The Ohio State University
Maysession 2016

Linguistic questions necessitate data

E.g., are lexical subcategorization facts correct?

Some verbs must take objects

**Kim devoured.*

Others cannot:

**Dana's fist quivered Kim's lip.*

But ...

Atkins and Levin (*IJLexicog* 1995) corpus study:

Transitive usages of intransitive verbs
(in a 50 million word corpus!)

The bird sat, quivering its wings

Factors of dative construction choice?

Verbs of instantaneous force allow dative alternation but not verbs of continuous imparting force like *push*

[Pinker 1981, Krifka 2001]

But ... [Bresnan et al. 2007]

“As Player A **pushed him the chips**, all hell broke loose at the table.”

Factors of dative construction choice?

Verbs of instrument of communication allow dative shift but not verbs of manner of speaking

[Pinker 1981, Levin 1993, Krifka 2001]

“Hi baby.” Wade says as he stretches. You just **mumble him an answer**. You were comfy on that soft leather couch.

Which factors affect verbal anaphors?

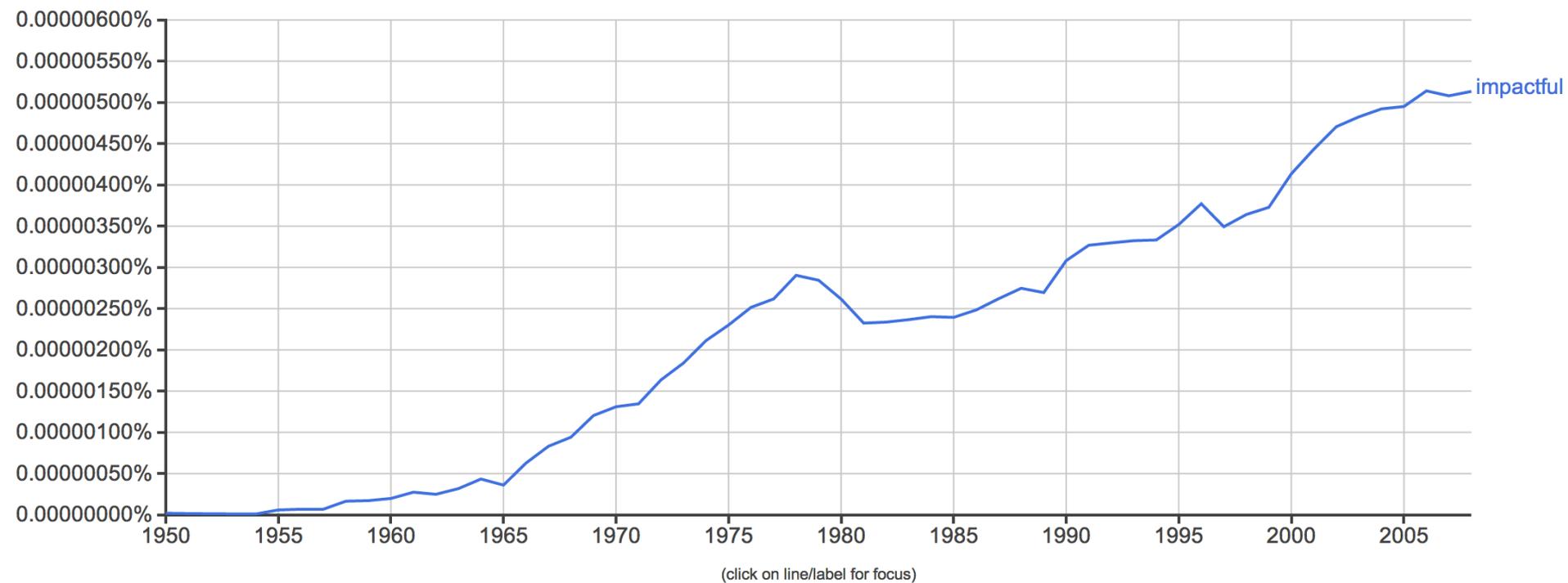
“Unexpectedly acceptable”

P. Miller at IvanFest, April 2013 (see also P. Miller 2011)

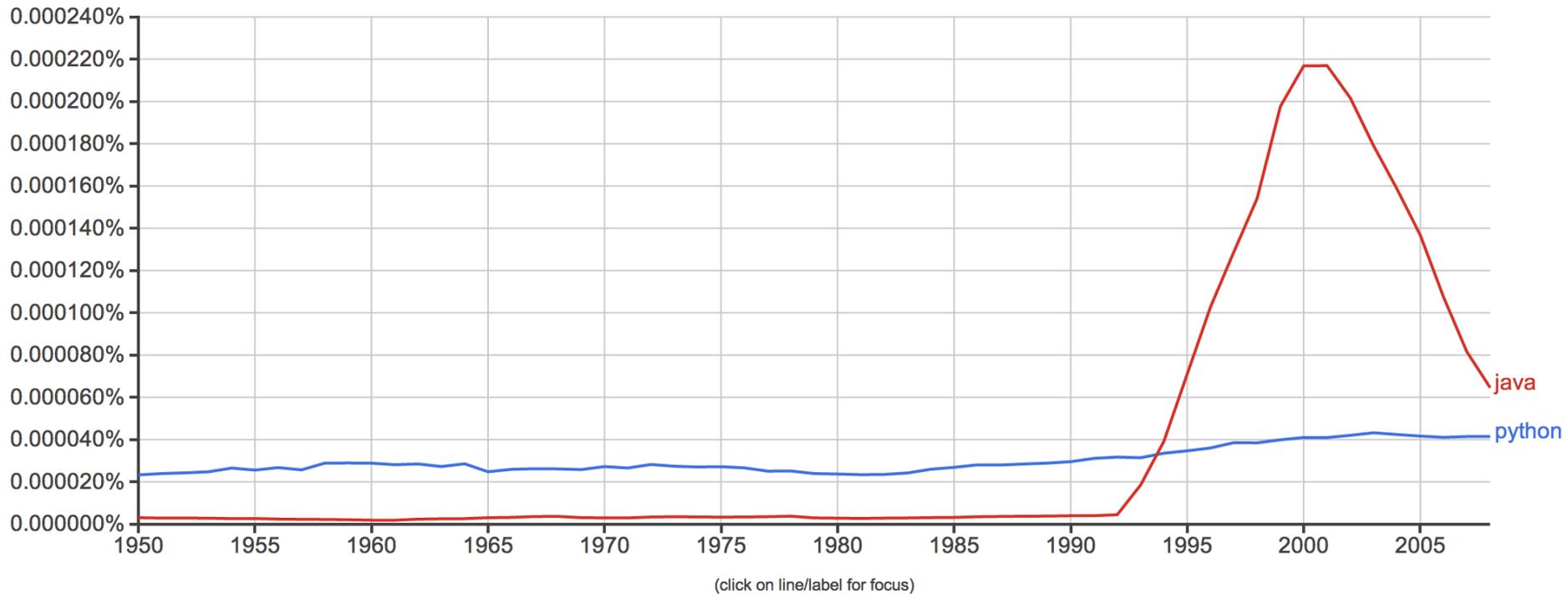
If I represent a wholly different Christianity, I **do so** only because I have found a way to help us recognize as Christians what extraordinary things we say when we worship God. (COCA)

Ungrammatical according to Huddleston and Pullum 2002, Culicover and Jackendoff 2005

Today: vast resources!



Today: vast resources!



But we don't want to do this by hand...

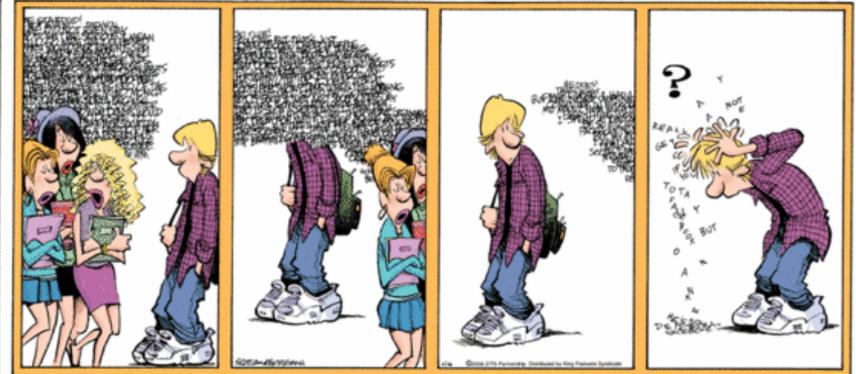
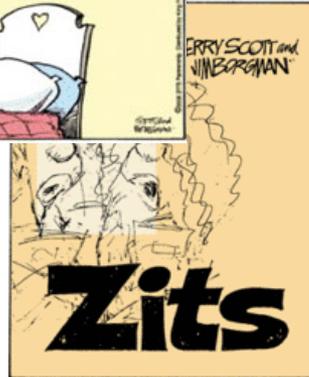
So we will learn to deal with tools that facilitate data processing!

- Unix commands
- Python
- R (for structured datasets) 
- Praat (for audio files) 

First case study:

Do women talk more than men?

First case study: Do women talk more than men?



[Thanks to Jason Grafmiller for the slide and idea]

According to recent stories in the media, they do!

Previous research has shown that women talk almost three times as much as men. In fact, an average woman notches up 20,000 words in a day, which is about 13,000 more than the average man. (*Science World Report 2/20/2013*)

According to recent stories in the media, they do!

Previous research has shown that women talk almost three times as much as men. In fact, an average woman notches up 20,000 words in a day, which is about 13,000 more than the average man. (*Science World Report* 2/20/2013)

New research indicates there's a biological reason why women talk so much more than men: 20,000 words a day spoken by the average woman, according to one study, versus about 7,000 words a day for the average man. (*Today Show* 2/21/2013)

According to recent stories in the media, they do!

Previous research has shown that women talk almost three times as much as men. In fact, an average woman notches up 20,000 words in a day, which is about 13,000 more than the average man. (*Science World Report* 2/20/2013)

New research indicates there's a biological reason why women talk so much more than men: 20,000 words a day spoken by the average woman, according to one study, versus about 7,000 words a day for the average man. (*Today Show* 2/21/2013)

Researchers have claimed on average 20,000 words a day for a woman on average. Just 7,000 for a man. (*ABC News* 2/21/2013)

According to recent stories in the media, they do!

Previous research has shown that women talk almost three times as much as men. In fact, an average woman notches up 20,000 words in a day, which is about 13,000 more than the average man. (*Science World Report* 2/20/2013)

New research indicates there's a biological reason why women talk so much more than men: 20,000 words a day spoken by the average woman, according to one study, versus about 7,000 words a day for the average man. (*Today Show* 2/21/2013)

Researchers have claimed on average 20,000 words a day for a woman on average. Just 7,000 for a man. (*ABC News* 2/21/2013)

Women speak an average of 20,000 words a day vs. 7,000 words for men, according to Louann Brizendine, a practicing physician at the University of California-San Francisco and author of *The Female Brain*. (*USA Today* 2/21/2013)

How to test this?

Spoken conversational corpora seem like ideal testing grounds

- Switchboard, Fisher, CALLHOME, CALLFRIEND, etc.
- All of these have speaker info, including gender

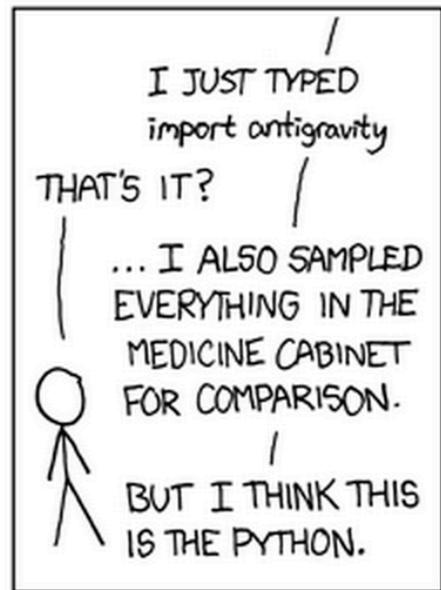
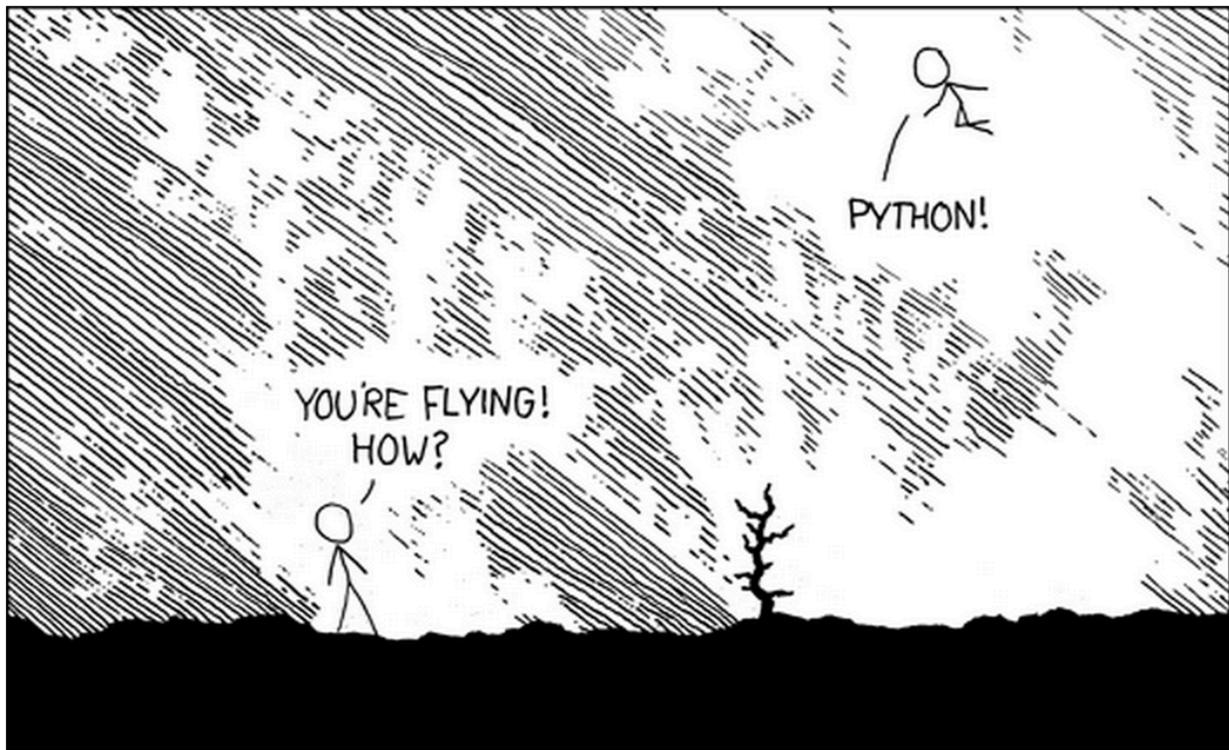
It may not be *exactly* what we need, but it might give us an idea.

Let's start!

- Download the “Fisher” file from Carmen
- We will take a look at the data using Unix commands
- And then start our way into Python

Homework

- We cheated... and actually transformed part of the Fisher corpus for you
- Now you will deal with the real data ;-)



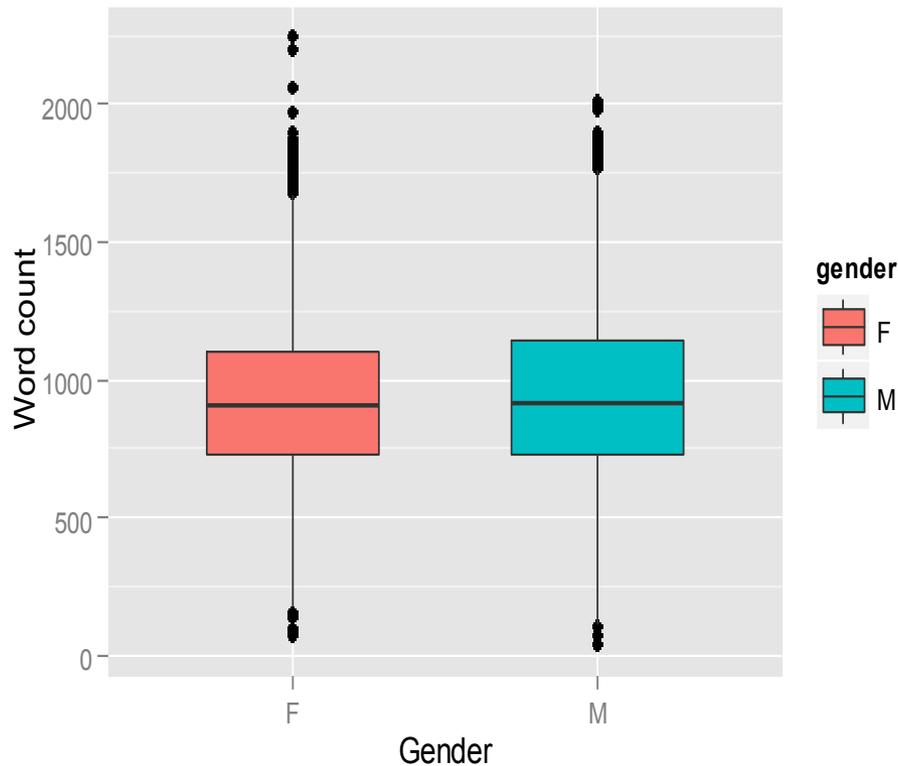
Fisher corpus, part 2

- 5849 conversations
- 6646 total female speakers
- 5052 total male speakers
- 1910 mixed-gender conversations
- 3939 same-gender conversations
- approximately 10.8 million words total

Fisher gender/word count study

word.cnt	speaker	gender	mixed	conv.id
1157	A	F	N	5851
588	B	F	N	5851
934	A	F	N	5852
542	B	F	N	5852
605	A	F	N	5853
977	B	F	N	5853
484	A	F	N	5854
1221	B	F	N	5854

Fisher, part 2: Results



Men use slightly *more* words than women, on average
($t = -2.7, p < 0.01$)

Women		Men	
Mean	SD	Mean	SD
922.9	(285)	938.2	(301)

Replication of Liberman

Mark Liberman at U Penn investigated these claims back in 2006 in a series of Language Log posts

They originate with claims published in L. Brizendine's book, *The Female Brain* (2006)

Liberman examined part one of the Fisher corpus. He found that the number and rate of words spoken were equivalent for men and women.

Female vs. Male Word Counts, Fisher 2003 (all conversations)

