

# Language as Influence(d): Power and memorability

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*Removed: image licensed for powerpoint presentation only;  
preview can be viewed here:*

*[https://cartoonbank.licensestream.com/LicenseStream/Store/  
Content?Filter.SearchString=23622&search=](https://cartoonbank.licensestream.com/LicenseStream/Store/Content?Filter.SearchString=23622&search=)*

**O brave new world, that has such people in't**

**Lots of on-line conversations**

(Facebook, Slashdot,...;YouTube comments...;Yelp reviews...,...)

**=**

**Many systems with humans and language as  
key components**

**=**

**Fantastic opportunities for  
NLP + the social sciences**

**to improve such systems and create new ones**

# Preview of case study 1

Who's in charge?



## Preview of case study 2

Does phrasing affect memorability?  
Or is it all language-external factors?

You can put lipstick on a pig, but it's still a pig.

*Palin's lipstick remark*

*Can wording also  
have an effect?*



# Aside: on presentation style

Your goal is not to convince your audience that you are brilliant, but that your solution is trivial.

It takes a certain strength of character to take that as one's goal.

**But if people think your findings are obvious, they must also believe that you are correct.**

-- paraphrase of Stuart Shieber

# Echoes of Power:

## Language effects & power differences in social interaction

Cristian Danescu-Niculescu-Mizil, Lillian Lee, Bo Pang & Jon Kleinberg  
WWW 2012



[http://www.baces.com/images/robots\\_androids\\_marvin\\_movie.jpg](http://www.baces.com/images/robots_androids_marvin_movie.jpg)  
Art Lien / AFP/Getty Images

# Example motivating applications

## Proactive task-discussion management

- Steering conversations back on track

## → Conversation facilitation systems

- Defusing imminent flame-wars
- Measuring engagement in MOOC settings
- e-govt participation initiatives

[Farina, Newhart, Cardie and Cosley '11]

# Language reveals power: “easy” cases

Your Honor, I agree.



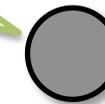
Thank you.



I'd love to get your thoughts on this when you are available.



Let's discuss later.



[Gilbert 2012;  
Diehl et al. 2007, Prabhakaran et al. 2012,  
Scholand et al. 2010]

**What about general (domain-independent) signals?**

# Who has the (conversational) lead?

Communicative behaviors are “patterned and coordinated, like a dance” [Niederhoffer and Pennebaker 2002]



Look for asymmetric adaptation of linguistic *style*

# Defining linguistic style coordination



Direct repetition: under speaker's control, could just be choice of topic. ☹️

Function-class matching: unconscious & frequent  
[Niederhoffer and Pennebaker 2002]



At least you were outside

quantifiers

It doesn't make much difference...

~~Doesn't really matter ...~~

~~It's not important ...~~



# Measuring immediate influence

How much does speaker  $x_1$  immediately trigger  $x_2$ 's use of function-word class  $c$ ?

= how much does  $x_2$  *coordinate* to  $x_1$  on  $c$ ?

[Danescu-Niculescu-Mizil, Dumais, Gamon WWW 2011]

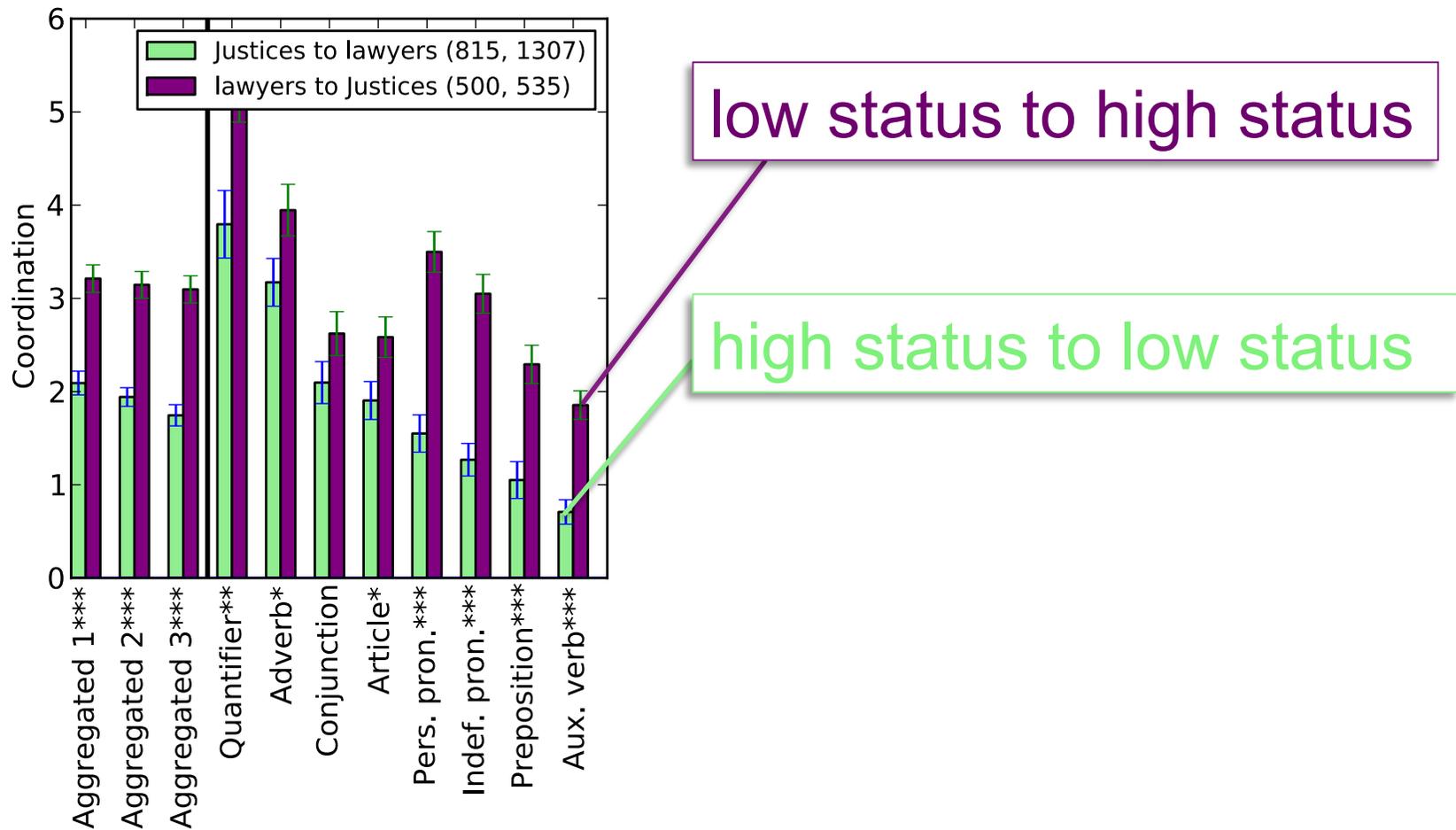
$\Pr(x_2 \text{ uses } c \mid x_1 \text{ uses } c, x_2 \text{ immediately replies})$

—  $\Pr(x_2 \text{ uses } c \mid x_2 \text{ immediately replies to } x_1)$

(reported as % (multiplied by 100) in the following)

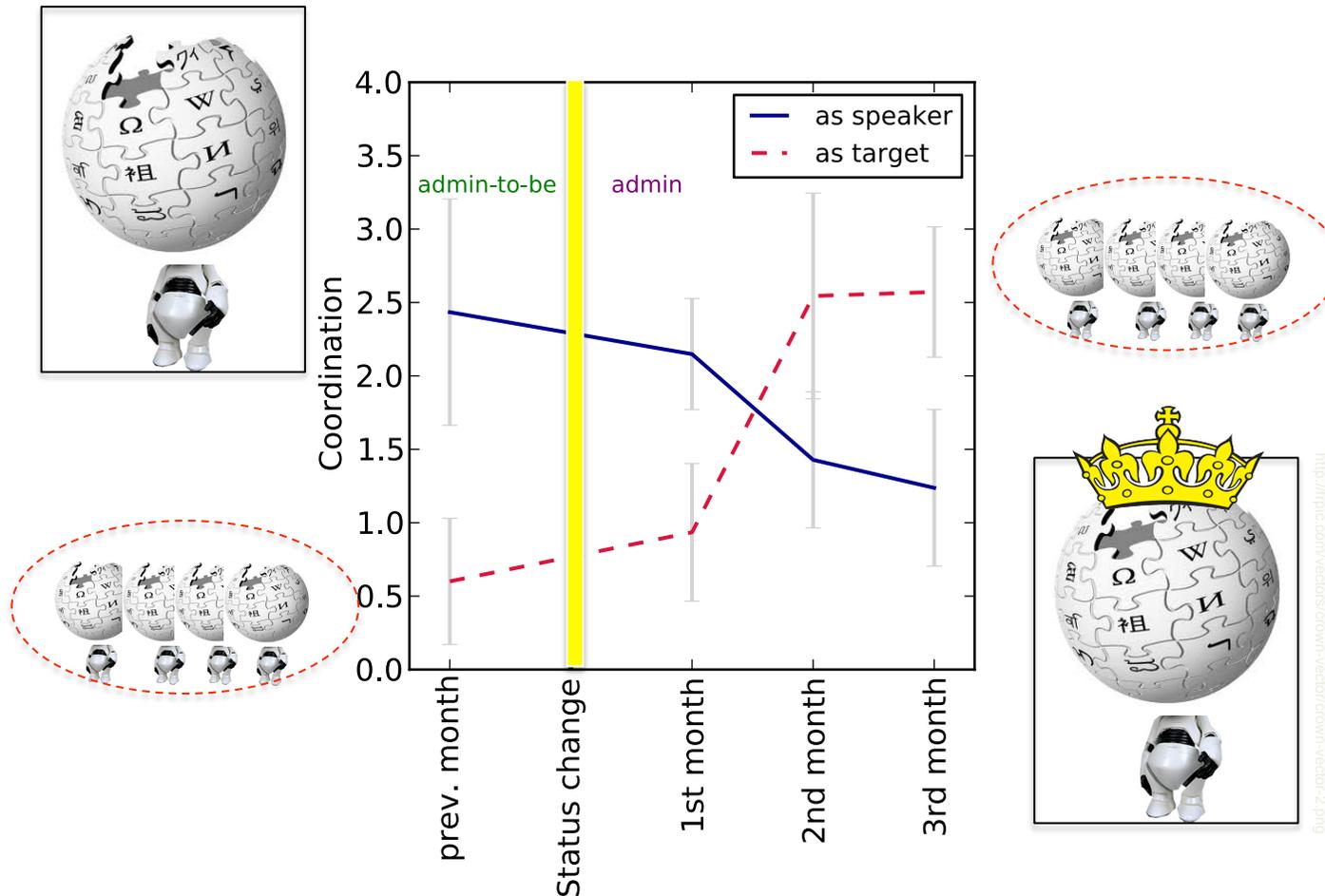
# Status in US Supreme Court transcripts

50K exchanges + metadata (download link on my homepage)



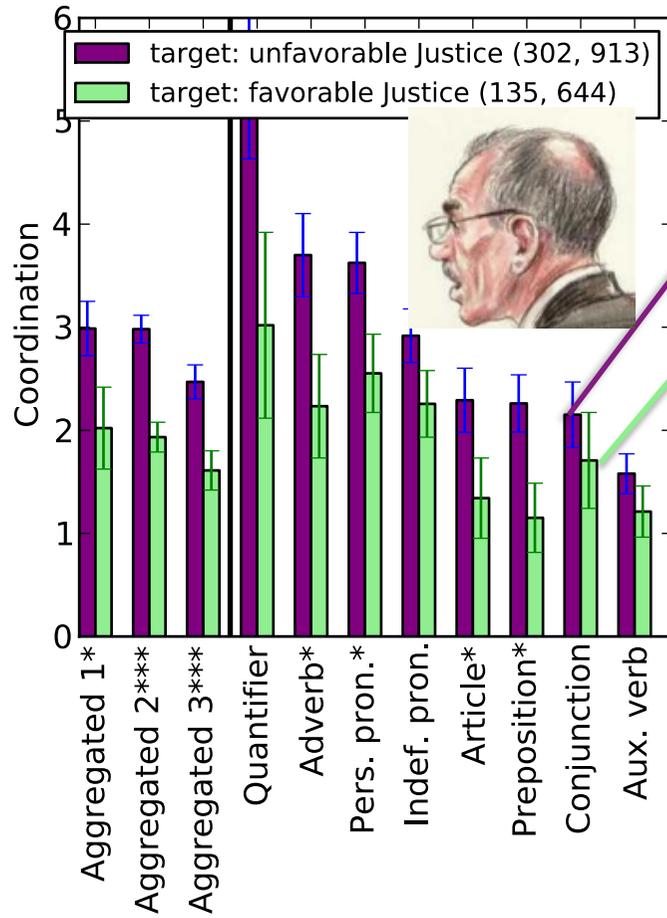
# Status change in Wikipedia

240K exchanges + metadata (download from my webpage)



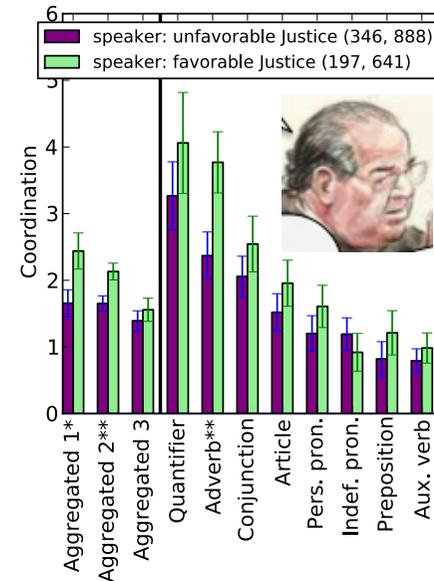
# Dependence in Supreme Court transcripts

Power differences can arise from *dependence* [Emerson 1962]



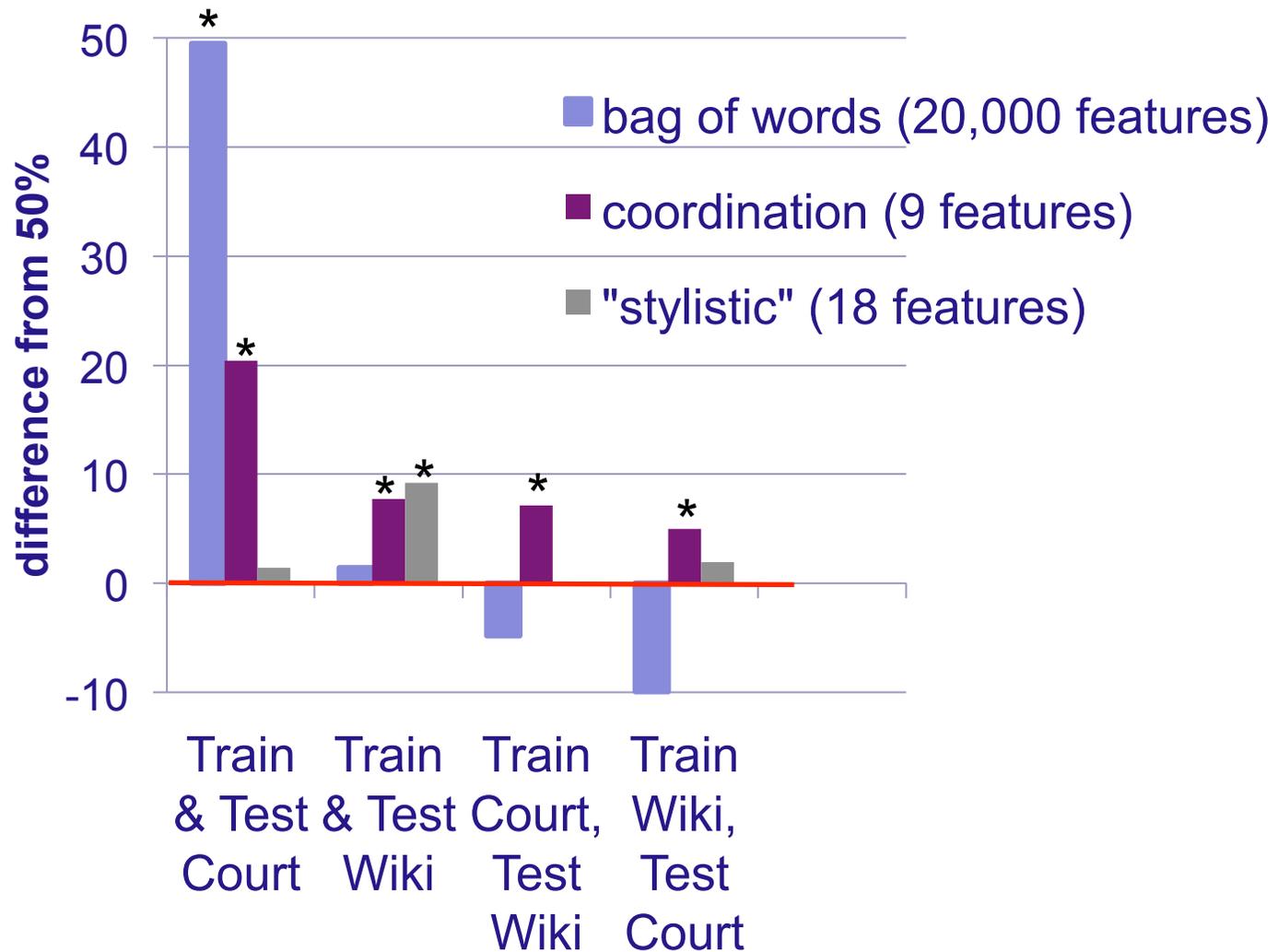
“needed to change” J’s mind

J “had your opinion”



# Evidence of domain independence

SVM classification with various features



# You Had Me at Hello:

## How phrasing affects memorability

Joint with Cristian Danescu-Niculescu-Mizil, Justin Cheng & Jon Kleinberg  
ACL 2012

You can put lipstick on a pig, but it's still a pig...



# Does phrasing affect memorability?

## Motivations:

- Ranking what material to promote
- Understanding influence, information diffusion, and persuasion.

[Much related work in many fields; see paper for refs. Our direct inspiration: Leskovec, Backstrom, & Kleinberg '09; Meme modification: Simmons, Adamic & Adar '11]

- What kind of data?
- What counts as “memorable?”
- How to tease apart language from context?  
(the lipstick-on-a-pig problem)

# Movie quotes: massively viral



**"FRANKLY, MY DEAR, I DON'T GIVE A DAMN"** TOPS AFI'S LIST OF 100 GREATEST MOVIE QUOTES OF ALL TIME

OTHER WINNERS INCLUDE:

THE GODFATHER, **"I'M GOING TO MAKE HIM AN OFFER HE CAN'T REFUSE"**

THE WIZARD OF OZ, **"TOTO, I'VE GOT A FEELING WE'RE NOT IN KANSAS ANYMORE"**

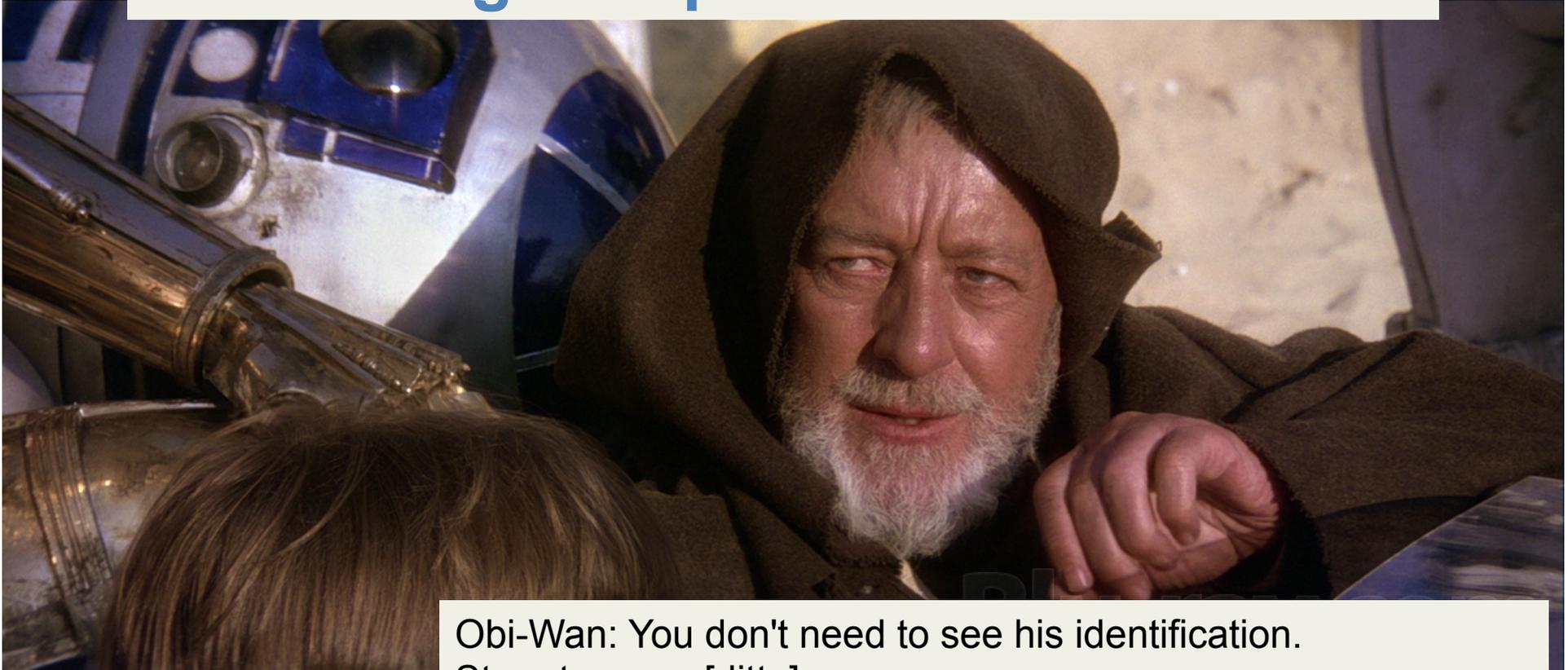
AND CASABLANCA, **"HERE'S LOOKING AT YOU, KID"**



## **AFI'S 100 Years...100 Movie Quotes: America's Greatest Quips, Comebacks and Catchphrases**

LOS ANGELES, June 22, 2005 — The American Film Institute revealed the top movie quotes of all time in **AFI's 100 Years...100 Movie Quotes**, a **three-hour special television event on CBS** hosted by actor and action star Pierce Brosnan with commentary from many of Hollywood's most celebrated actors and filmmakers. A jury of 1,500 film artists, critics and historians selected "Frankly, my dear, I don't give a damn," spoken by Clark Gable in the celebrated Civil War epic, GONE WITH THE WIND as the most memorable movie quote of all time.

## Controlling for speaker and context



Obi-Wan: You don't need to see his identification.

Stormtrooper: [ditto]

Obi-Wan: These aren't the droids you're looking for.

Stormtrooper: [ditto]

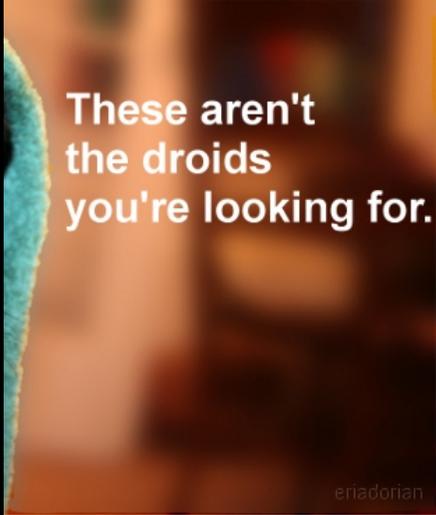
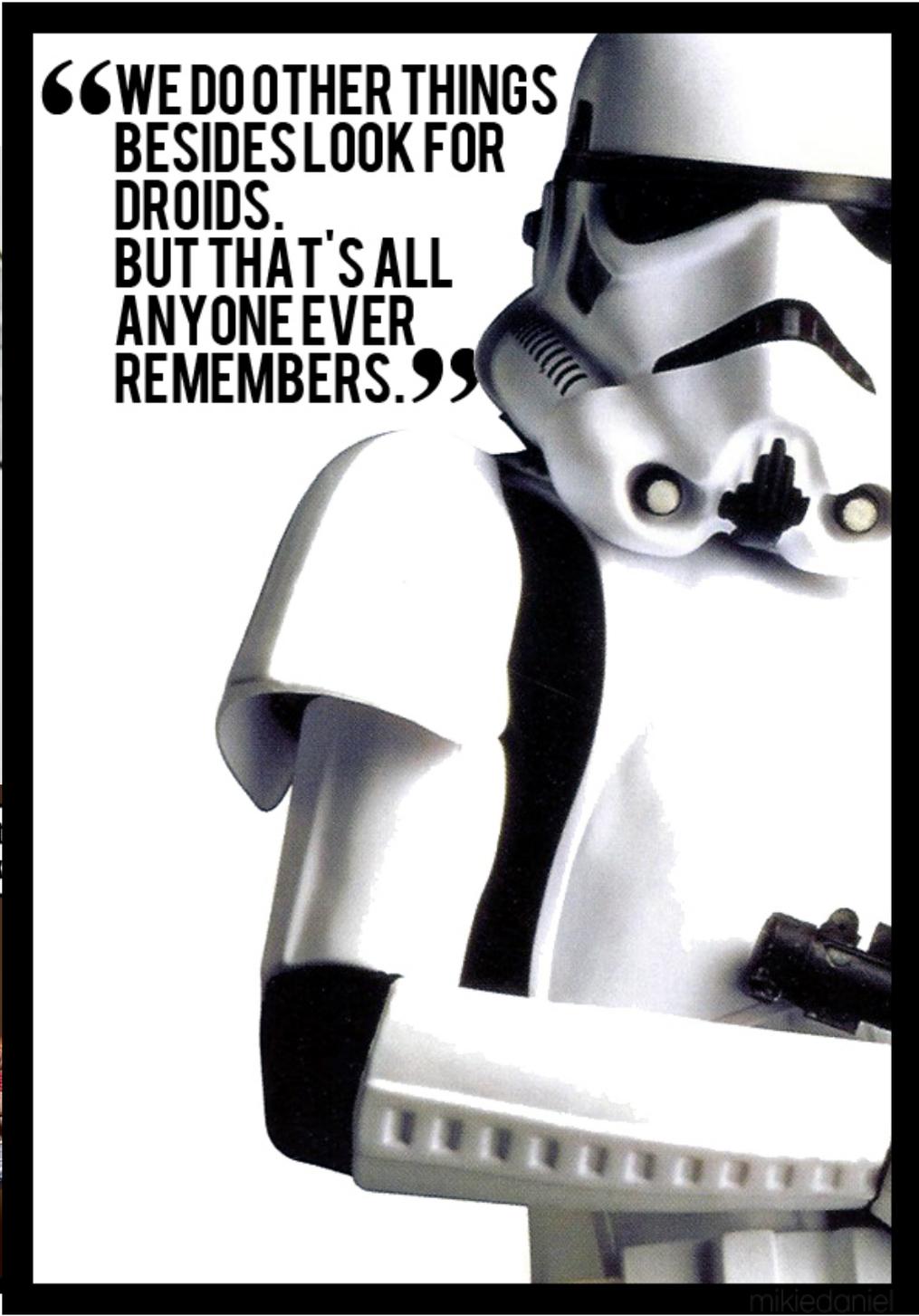
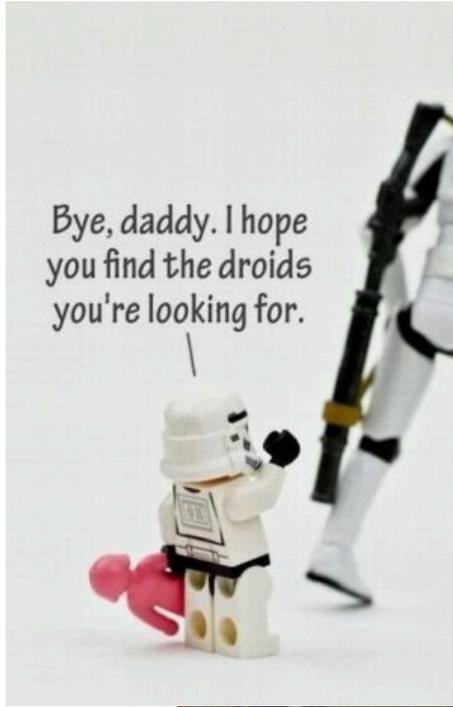
Obi-Wan: He can go about his business.

Stormtrooper: [ditto]

Obi-Wan: Move along.

Stormtrooper: [ditto]

<http://www.blu-ray.com/movies/screenshot.php?movieid=14903&position=6>



<http://mikedaniel.files.wordpress.com/2011/09/mooners.jpg>  
[http://blogs.livjournal.com/entry/snook\\_471716088927245440245440\\_original.jpg](http://blogs.livjournal.com/entry/snook_471716088927245440245440_original.jpg)  
<http://bloodyot.com/wp-content/uploads/2009/11/droids-we-were-looking-for1.jpg>

# Data

From ~1000 movie scripts (many lines long),  
pair IMDB “memorable quotes” with  
~adjacent,  
same-length,  
same-speaker  
“non-memorable quotes”.

Filter with google/bing counts: 2200 pairs.

Available at

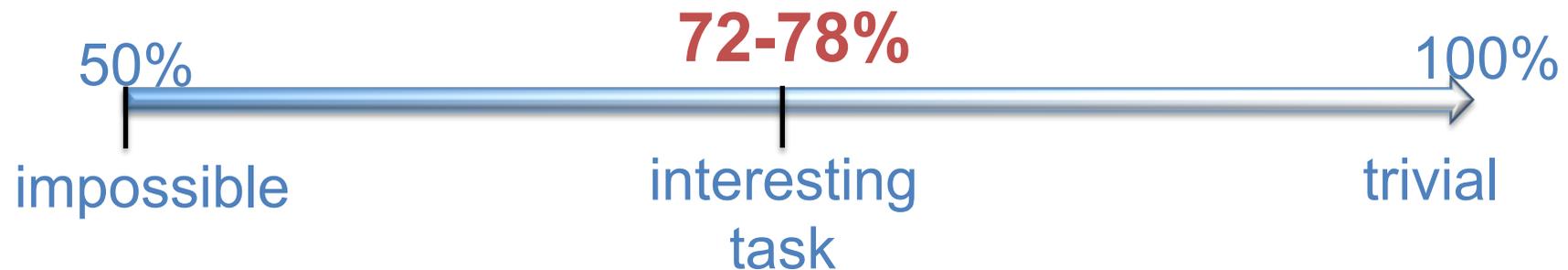
<http://www.mpi-sws.org/~cristian/memorability.html>

# Pilot study

Subjects were shown 12 pairs from movies they *hadn't* seen.

<http://www.mpi-sws.org/~cristian/memorability.html>

Movie	First Quote	Second Quote
Jackie Brown	Half a million dollars will always be missed.	I know the type, trust me on this.
Star Trek: Nemesis	I think it's time to try some unsafe velocities.	No cold feet, or any other parts of our anatomy.
Ordinary People	A little advice about feelings kiddo; don't expect it always to tickle.	I mean there's someone besides your mother you've got to forgive.



(context/actor effects  
explain all, bad labels, etc.)

## On average, memorable quotes (significantly)...

... contain more **surprising** combinations of words:  
according to 1-,2-,3-gram lexical language models  
trained on the Brown corpus

*“...aren't the droids...”*

... are built on a more **common** syntactic scaffolding:  
according to 1-,2-,3-gram part-of-speech language  
models trained on Brown

*“You're gonna need a bigger boat”*  
[vs. *“You're gonna need a boat that is bigger”*]

## On average, memorable quotes (significantly)...

... are more **portable/general**:

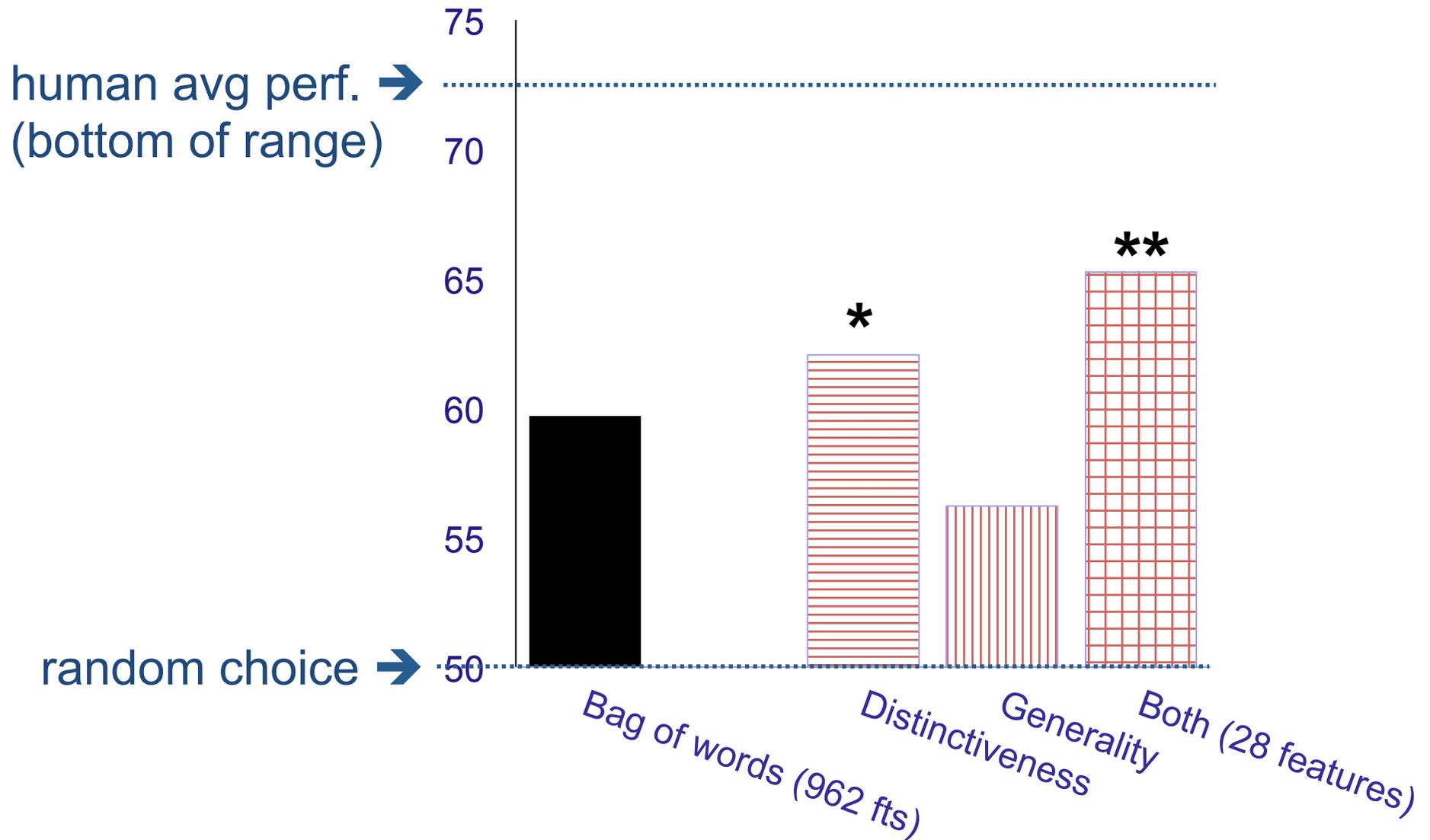
- more indefinite articles

*“You’re gonna need a bigger boat”*

[vs. *“You’re gonna need **the** bigger boat”*]

- fewer 3<sup>rd</sup> person pronouns (“he” vs “we”),
- fewer past tense verbs and more present tense verbs

# Improved classification accuracy (SVMs, 10-fold cross-validation)



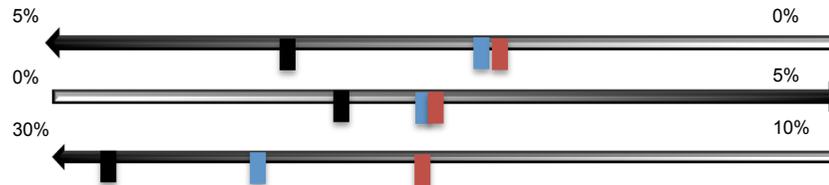
# Generalizing to ad slogans

**Ad slogans** are closer to **memorable quotes** in lexical and syntactic choice:

Memorable-quote LMs predict slogans better than **non-memorable-quote** LMs

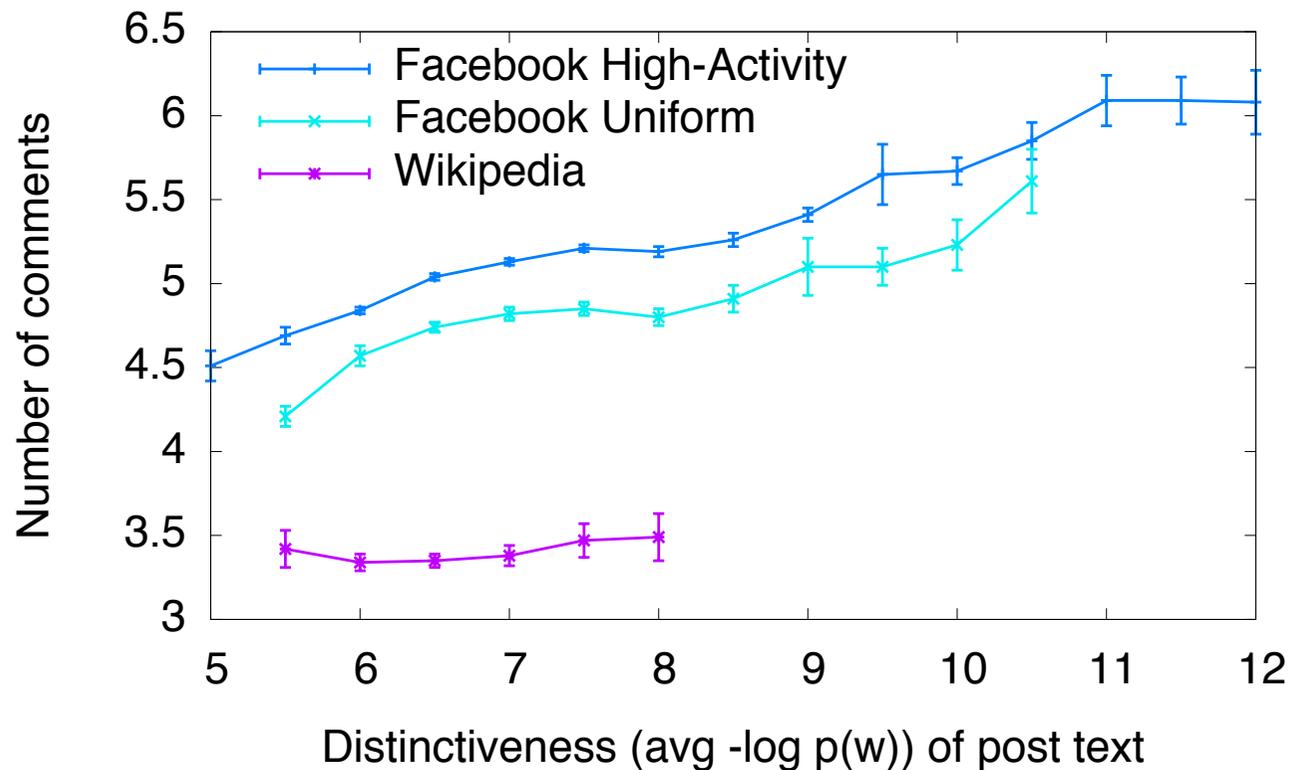
... and in generality:

% 3rd pers. pronoun:  
% indefinite articles:  
% past tense:



# Applications to social-media UI

joint with L. Backstrom, J. Kleinberg, C. Danescu-Niculescu-Mizil, WSDM 2013



More-unusual Facebook posts get more comments  
(under certain circumstances), but not so with Wikipedia.

# Aside: re-entry prediction: A new "interestingness" characterization

## (1) Length/volume

## (2) Re-entry

The screenshot shows a Facebook comment thread. The top comment is from 'The Troublemaker' (profile picture of a man in a white shirt) with the text: "I have something misguided and angry to say about this current event. I'm posting it here because I know it will start a giant debate, and I am super bored." Below it is a comment from 'The Bait-Taker' (profile picture of two women) with the text: "You're wrong. You're the most wrong person ever. I had an uncontrollable urge to tell you that even though I can feel myself getting pulled into something we'll both regret." This comment is circled in red. Below it is another comment from 'The Troublemaker' with the text: "Wrong? Are you kidding me!? I plagiarized that word-for-word from something my talking head of choice said on his or her cable news show last night!" Below that is a comment from 'The Chime-In' with the text: "I agree with Troublemaker because he reinforces everything I already suspected." Below that is a comment from 'The Lazy Activist' with the text: "Passionate rebuttal! Here's a link to an article I skimmed. I'll post it to prove my point, but there's probably something in it that can be used against me. <http://www.newssource.com/date-articlesnumber>" Below that is another comment from 'The Bait-Taker' with the text: "Wow... is that last paragraph true?" This comment is also circled in red. Below it is a comment from 'The Lazy Activist' with the text: "I have no idea. But yes." A red dotted arrow points from the text "(2) Re-entry" to the first circled comment. A red solid arrow points from the text "(2) Re-entry" to the second circled comment. A blue vertical arrow on the right side of the screenshot points downwards. To the right of the screenshot, the text "Image: Chase Mitchell, College Humor, 2010" is written vertically.

# Conclusions (I)

I had not yet come to the conviction:  
It is not what you say that matters  
but the manner in which you say it;  
there lies the secret of the ages.

--- William Carlos Williams,  
preface to *Selected Essays*

Social power relationships affect language  
even at extremely fine-grained levels.

Phrasing does indeed have some effect on  
memorability and engagement.

## Conclusions (II)

Improved computational techniques for socio-computational systems is an important broader direction.

I view deeper interplay between  
*constructing NLP-enabled systems*  
and understanding  
*how people use & are affected by language*  
as a huge opportunity for all concerned.



**I think this is the beginning  
of a beautiful friendship.**

Thanks!