

# Echoes of power: Language effects and power differences in social interactions

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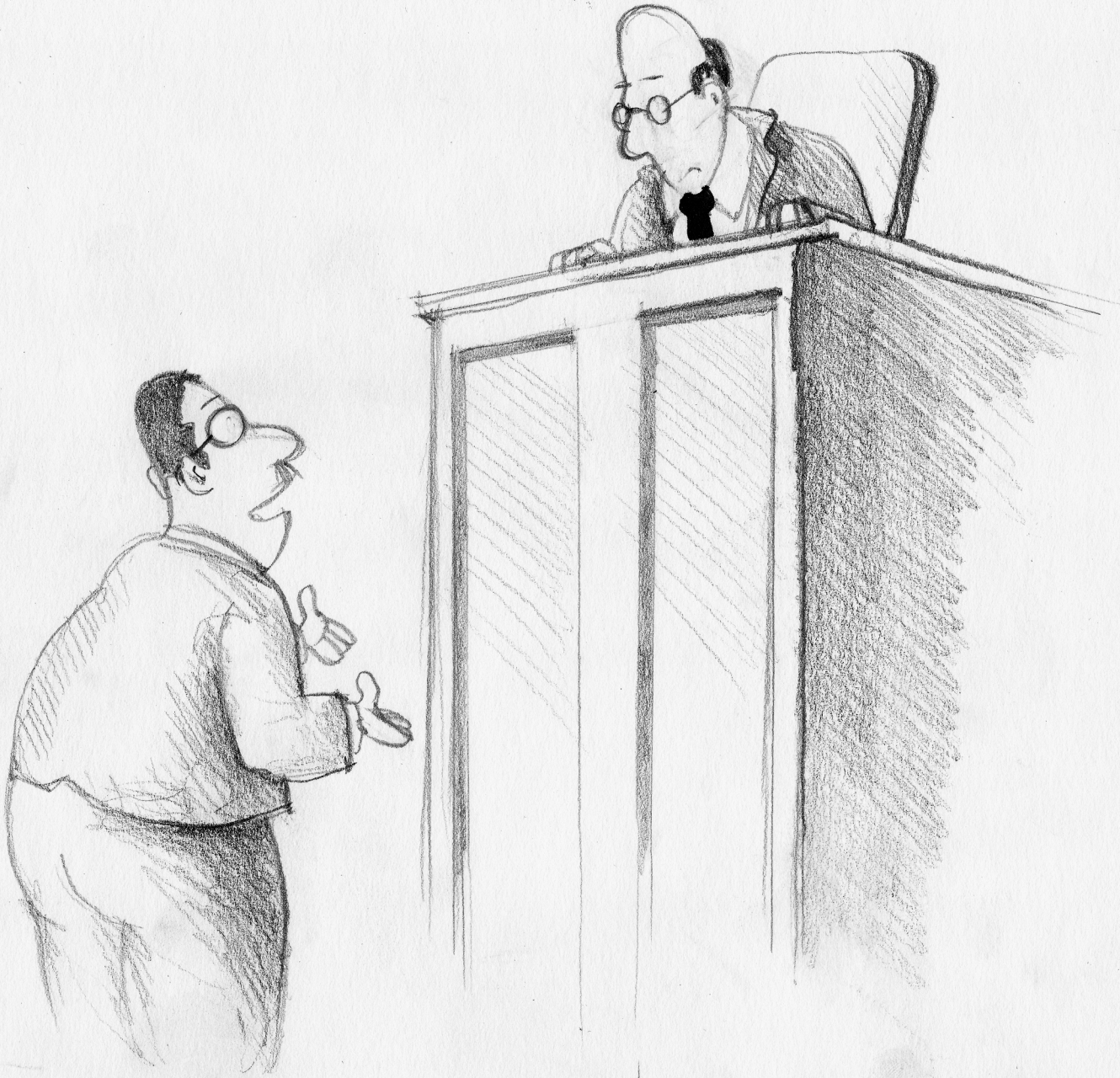
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RANDOM  
CORNER  
OF THE  
INTERNET











# Who's got the upper hand?

## Applications in social media systems:

Automatically discovery of social relations

Track evolution of relations over time

Viral advertising in social networks

Detecting when nobody is in charge



**Non-conscious coordination**



**Who's got the upper hand?**



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When conversing, people non-consciously adapt to one another's communicative behaviors. [Giles et al., 1991; Chartrand and Bargh, 1999]



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## Example:

Client: “At what time does your shop close?”

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[Levelt & Kelter, 1982]



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[Levelt & Kelter, 1982]

# Linguistic style coordination

**Linguistic coordination occurs:  
instantaneously  
non-consciously**



# Linguistic style coordination

**Linguistic style:**

for us: function word class usage

**8 “stylistic dimensions”:**

usage of articles, prepositions, conjunctions, quantifiers etc.

# Linguistic style coordination

## Linguistic style:

for us: function word class usage

## Coordination is not just exact matching:

Client: “**At** what time does your shop close?”

Shopkeeper: “**In** two hours.”

Shopkeeper: “Five o’clock”





# Coordination and power differences

**Hypothesis:** power differences are revealed by coordination behavior



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**In order to test this hypothesis:**

How can we measure coordination?

# Measuring coordination





# Measuring coordination



VINCENT: Antwan probably didn't expect Marsellus to react like he did, but he had to expect a reaction.

# Measuring coordination

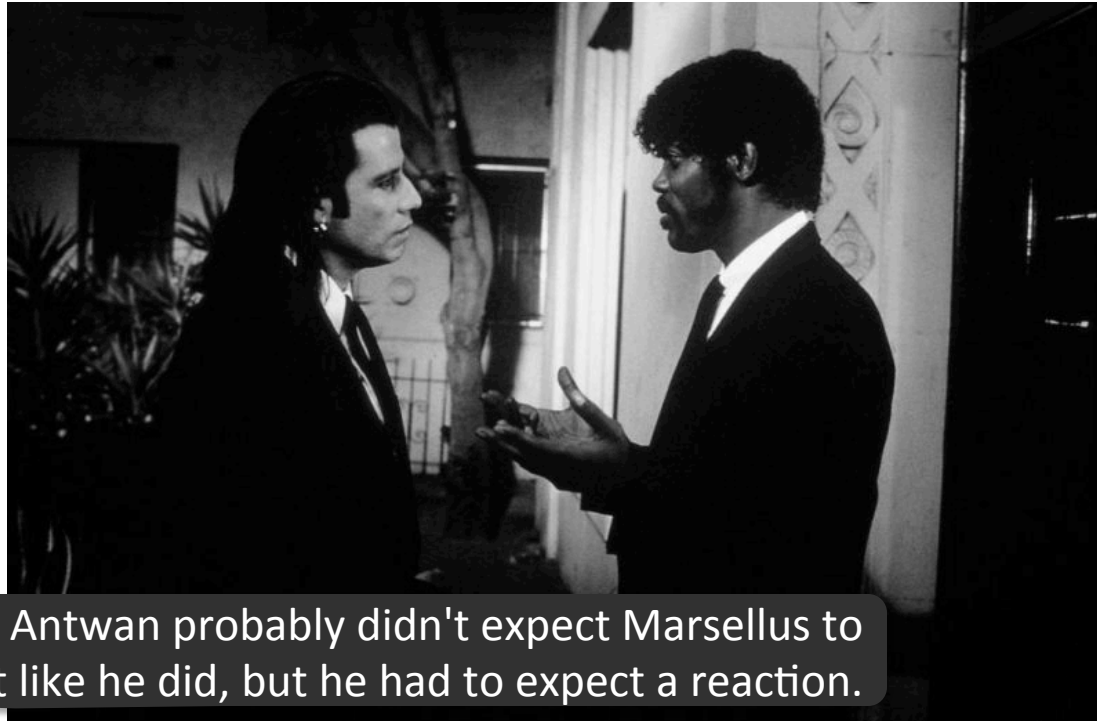


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→ JULES: He just massaged her feet, massaging someone's feet is nothing, I massage my mother's feet.



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**Matching on article presence.**

**But matching  $\neq$  coordination !**

**(e.g., chance or bad guys like articles)**

# Measuring coordination

**What we want:** how much *Vincent's* inclusion of an article (say) **immediately triggers** the usage of articles in *Jules'* reply?

**NOT:** how similar Vincent's style is to Jules' style in general ...  
or even in this particular conversation



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does not control for style similarity



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In words: “How much does the probability of Jules using an article increase as a direct consequence of Vincent using an article?”



**Non-conscious coordination**



**+ measure for coordination**

**Who's got the upper hand?**



**Non-conscious coordination**

+ measure for coordination

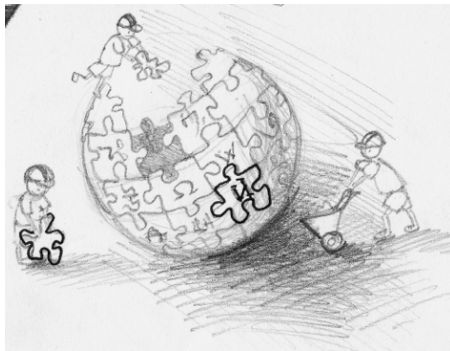
**Who's got the upper hand?**

**Empirical setting**



# Coordination and power differences

Two very different empirical settings:

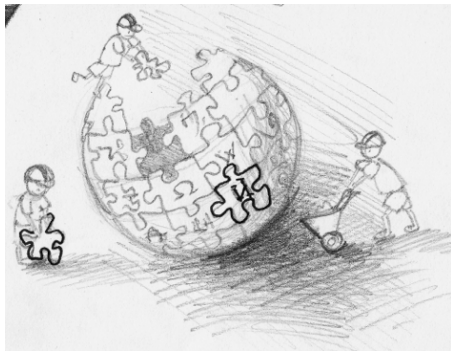


Wikipedia community of editors:

- 240,000 conversational exchanges on “talk pages”
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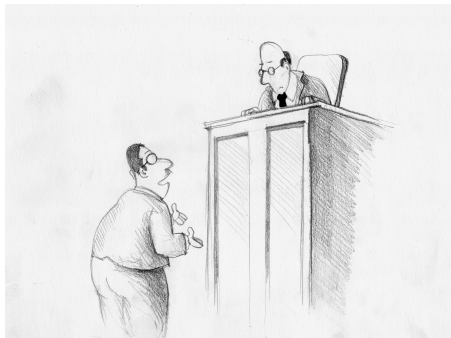
# Coordination and power differences

## Two very different empirical settings:



Wikipedia community of editors:

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U.S. Supreme Court oral arguments:

- 50,000 verbal exchanges
- between **Justices** and **lawyers**



# Coordination and power differences

Sources of power differences (from social exchange theory):

Status:             $X$  has higher status than  $Y$   $\rightarrow$   $X$  has power over  $Y$

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Sources of power differences (from social exchange theory):

Status:  $X$  has higher status than  $Y \rightarrow X$  has power over  $Y$

Dependence:  $Y$  needs something from  $X \rightarrow X$  has power over  $Y$   
(at least temporarily)



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**admins** > **non-admins** (Wikipedia)

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**Justices** > **lawyers** (US Supreme Court)



# Coordination and power differences

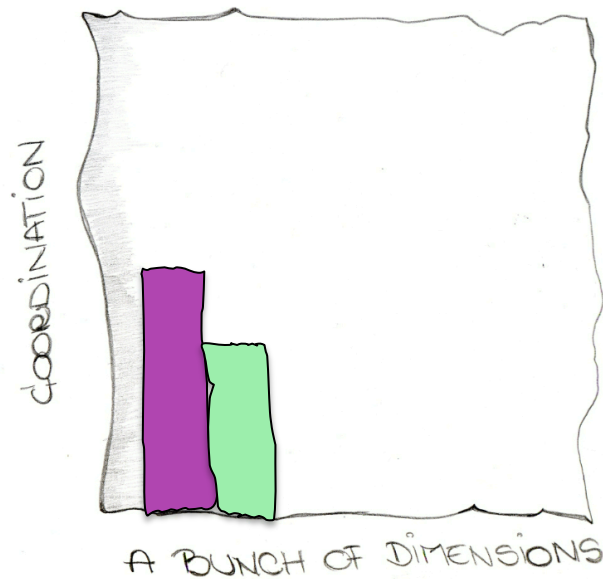
**Hypothesis:** Higher power → others coordinate more towards you

# Coordination and power differences

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Coordination towards  
high-power people  
(purple)

Coordination towards  
low-power people  
(green)





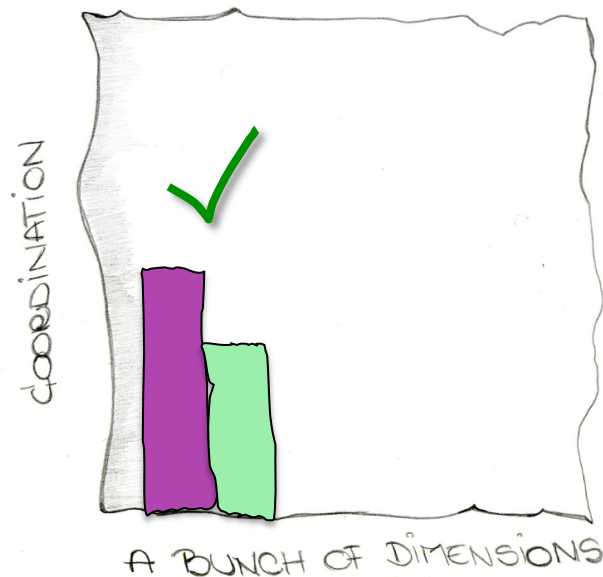
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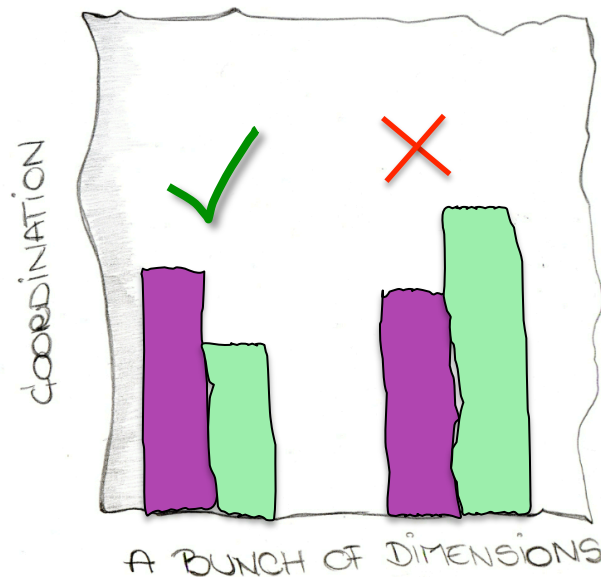
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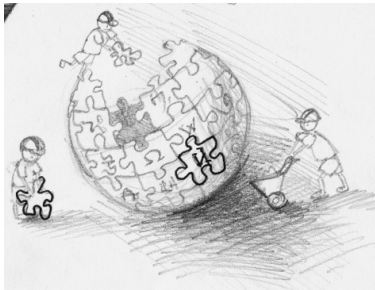


# Coordination and power differences

Higher power (by **status**) → others coordinate more towards you

Wikipedia:

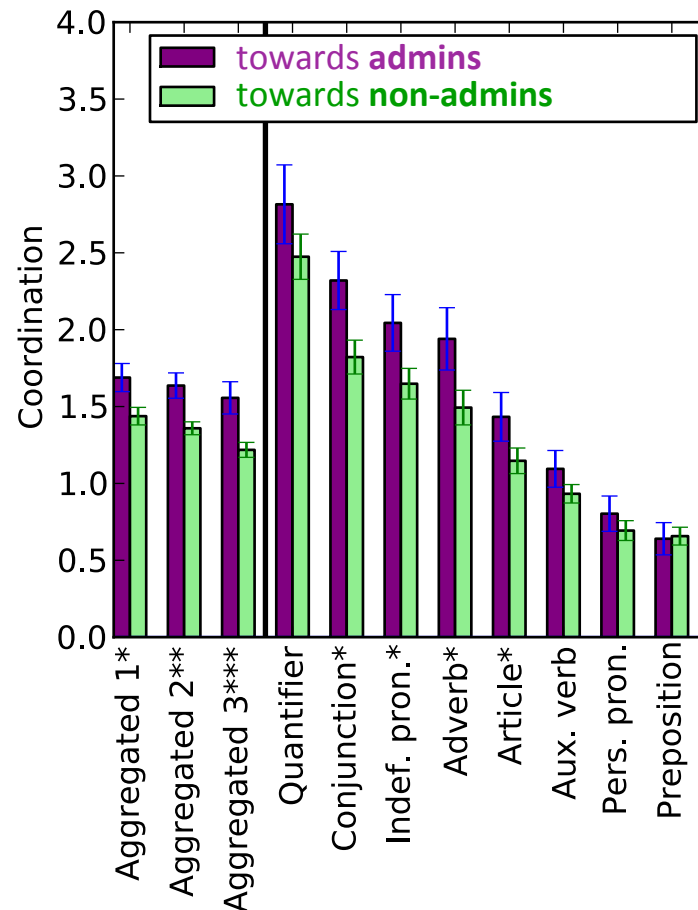
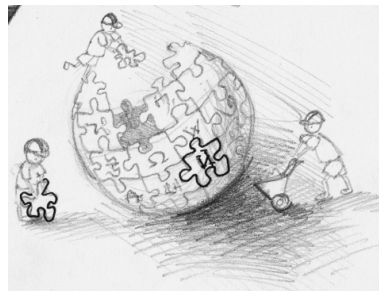
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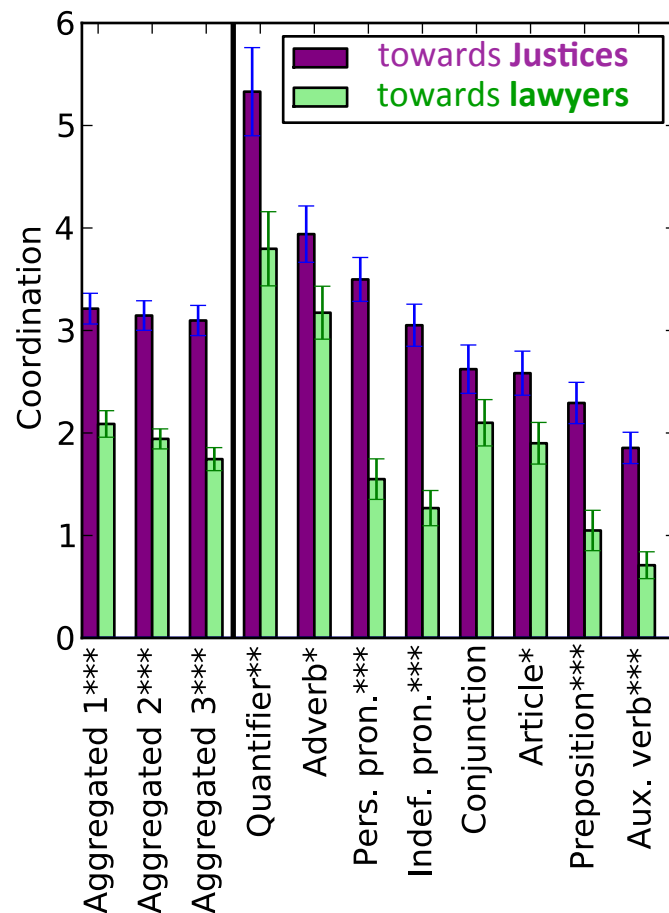
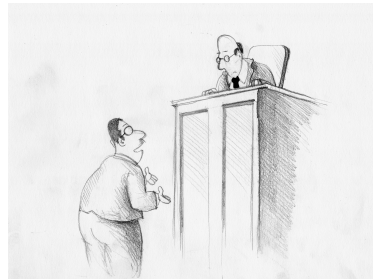
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Supreme Court:



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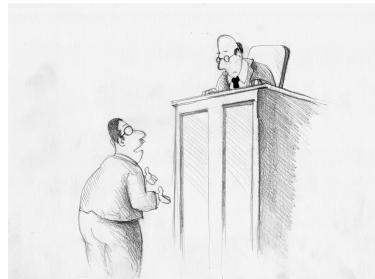
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**unfavorable Justice** > **favorable Justice** (Supreme Court)

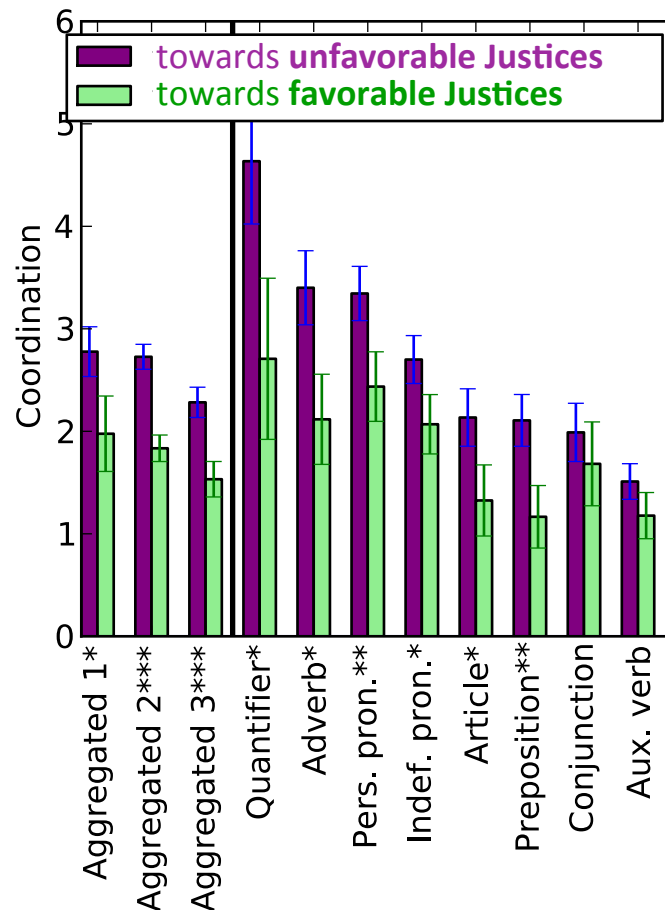
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Supreme Court:



(same in Wikipedia)



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# Coordination and power differences

Isolating the effect of power differences

# Coordination and power differences

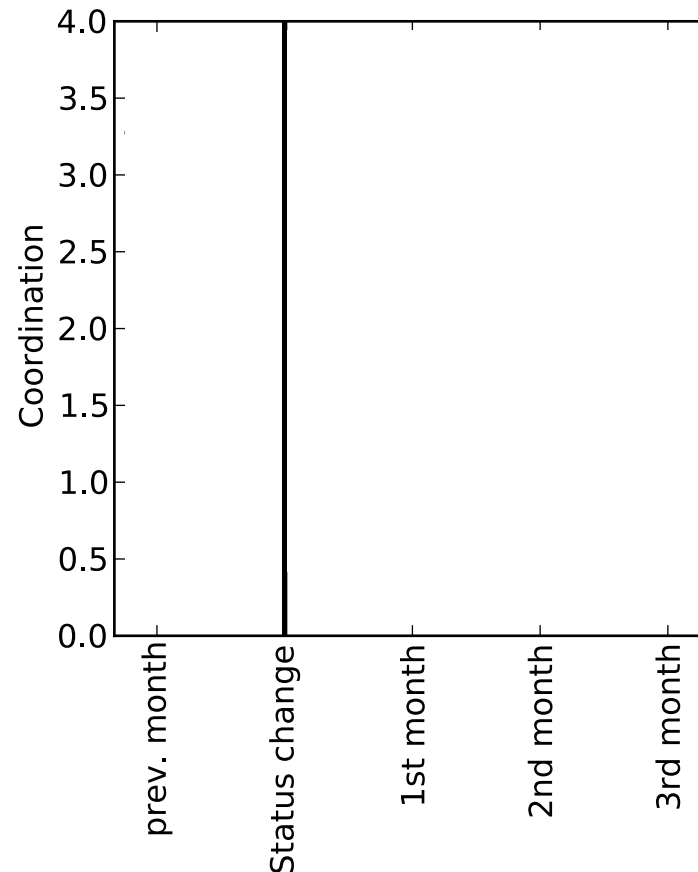
Isolating the effect of power differences

Status change: **non-admins** are promoted to **admins** through elections



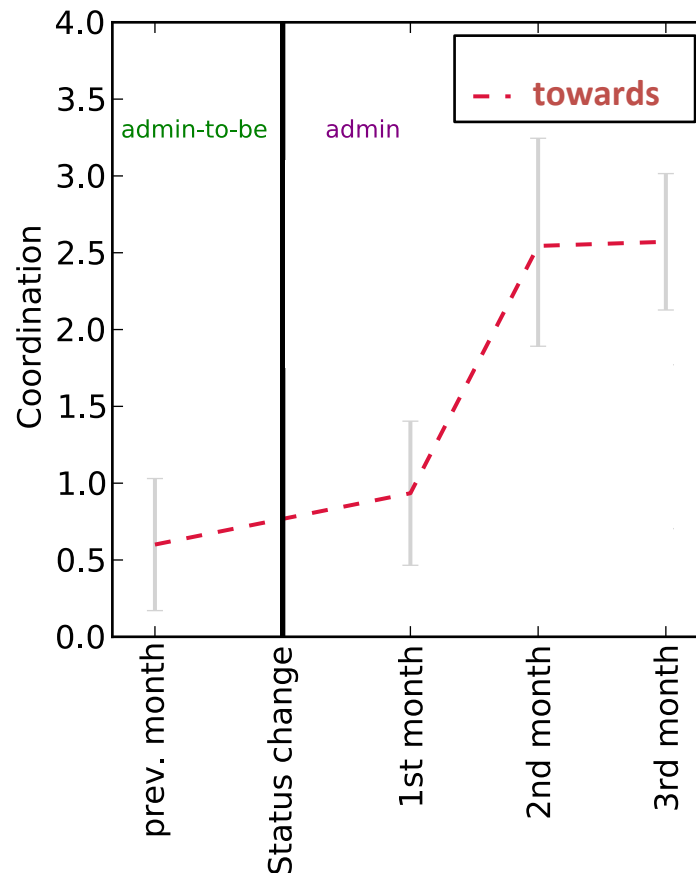
# Coordination and status change

Track a fixed group of users as they undergo **status change**



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Coordination **towards** users increases after these gain higher status

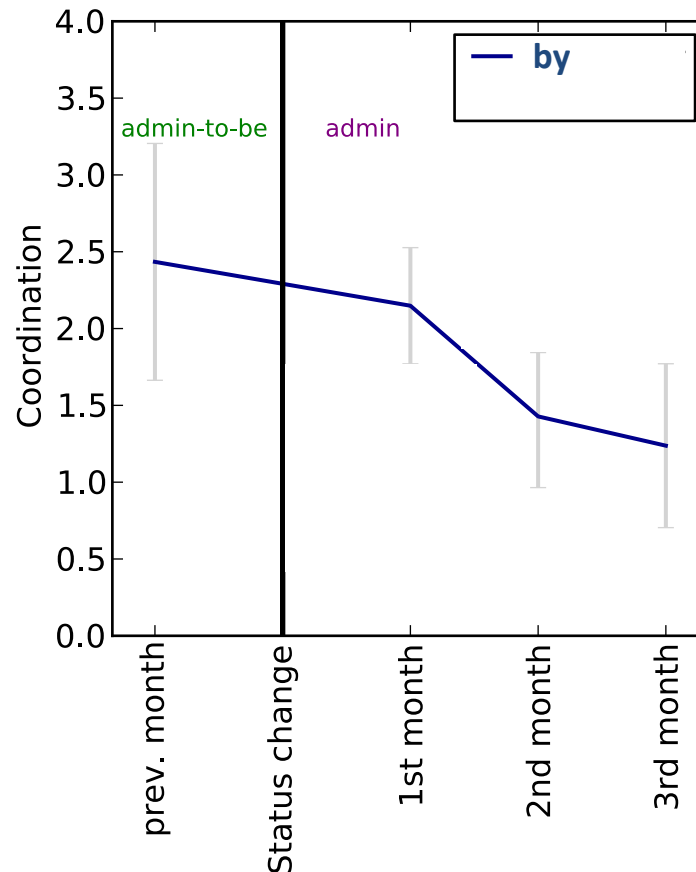


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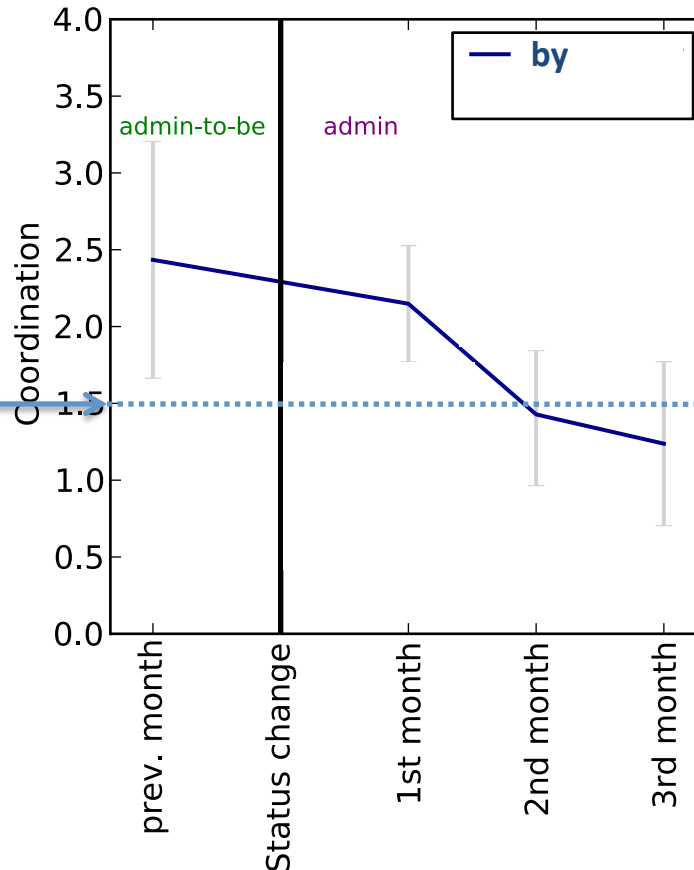
Coordination **by** users decreases after these gain higher status



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Track a fixed group of users as they undergo **status change**

... even though initially “admins-to-be” were coordinating more than the **average user**,



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# Who's got the upper hand?

**Concrete application for social media systems:**

Task: Given two interlocutors, predict which one has more power  
Assuming zero domain knowledge (a cross-domain setting)



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Bare-bones implementation based on coordination effects:

SVM classifier using **just 9** coordination features

brings 15% absolute improvement over

SVM classifier using **20,000** bag-of-words features.



RANDOM  
CORNER  
OF THE  
INTERNET

THANK YOU