Governance in Social Media
A Case Study of the Wikipedia Promotion Process

Ferry Abt

University Konstanz

Wiki collaboration networks
Outline

1 Introduction

2 The Data

3 The Experiment
   - Relative Merit of Candidates and Voters
   - Direct Voter-Candidate Interactions
   - Thresholds and Diversity in Voter Behavior
   - Dynamics of Elections over Time

4 Conclusion

5 Discussion
Research Question

- Is the assessment of a candidate absolute or relative?
  → *How do voters evaluate candidates?*
  → *How does a voter behave across different elections?*

- Are the individual votes (and thereby the overall election outcome) influenced by the sequential, public nature of the election?
Elections between 9/17/04 and 1/6/08 (3 years 3 months 20 days)

- 2,794 elections (1,248 successful)
- 114,040 votes
- 83,962 support; 23,118 oppose; 6,960 neutral
  \[ \Rightarrow \text{baseline support: 0.784} \]
- Avg successful: 52.2 supt.; 3.1 opp.; 1.5 neut. \[ \Rightarrow 94.7\% \text{ supt. votes} \]
- Avg failed: 11.9 supt.; 12.5 opp.; 3.3 neut. \[ \Rightarrow 31\% \text{ supt. votes} \]
- 7\% of support votes were commented
- 82\% of oppose votes were commented
The Data

Election Statistics

![Graph showing election statistics]
The Data

User Statistics

Elections between 9/17/04 and 1/6/08 (3 years 3 months 20 days)
- 2,794 elections (1,248 successful)
- 8,298 distinct users (7,499 voters, 2,539 candidates)

<table>
<thead>
<tr>
<th>User type</th>
<th>N</th>
<th>$f_v$</th>
<th>$p_s$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrators</td>
<td>1,235</td>
<td>44%</td>
<td>0.794</td>
</tr>
<tr>
<td>Unsuccessful candidates</td>
<td>1,304</td>
<td>12%</td>
<td>0.748</td>
</tr>
<tr>
<td>Other users (voters)</td>
<td>5,759</td>
<td>44%</td>
<td>0.783</td>
</tr>
</tbody>
</table>
Relative Merit

- Probability of $C$ receiving positive vote function on $C$’s attributes
  ⇒ There are criteria for an admin to meet
- or function on the relation between $C$’s and $V$’s attributes
  ⇒ The voter compares himself to the candidate
- Latter if relation has significant influence on voting behavior
- Function from group (similar attr.) to fraction of positive votes ($p_s$)
Relative Merit
Edit Difference and Barnstar Difference

![Graph showing the fraction of positive votes against log difference in the number of edits.]

![Graph showing the fraction of positive votes against Barnstar difference.]

Baseline
Voter–Candidate Interactions

Represented by edits to each other’s talk-pages.
Threshold-Based Analysis of Voting Behavior

- Voter knows preceding votes $\Rightarrow$ is influenced by them.
- *Positive precedent*: fraction of pos. votes before the vote of interest
- $f(x) =$ fraction of positive votes, given a positive precedent $x$
- $h(x) = x$ if positive precedent is only parameter for voting behavior $\Rightarrow$ “Herding”-baseline
Threshold-Based Analysis of Voting Behavior

![Graph showing the probability of voting positively against the fraction of support votes at the time of vote. The graph includes lines for all users, admins, and non-admins.](image-url)
Diversity of Individual Response Functions

- $f_i(x)$, analog to $f(x)$ but only for a single user $i$
- 11 users participated in $> 400$ elections
- 28 users participated in $> 300$ elections
- 78 users with $> 200$ votes
Diversity of Individual Response Functions
for users who participated in over 200 elections

![Graph showing diversity of individual response functions with probability of voting positively on the y-axis and fraction of support votes at time of vote on the x-axis. The graph includes lines for average admin and average non-admin.]
Diversity of Individual Response Functions over time
Time of vote
When do different groups vote?

![Graph showing the fraction of votes over time for different groups.]

- All voters
- Admins
- Nonadmins

- All voters
- Frequent voters
- Non-frequent voters
The History of an Election

![Graph showing support and oppose votes over time.](image-url)
The History of an Election

![Graph 1: Final fraction of support votes vs. Number of votes in the election]

![Graph 2: Fraction of support votes so far vs. Time (vote index)]

- **Successful elections**
- **True failed elections**
- **Randomized failed elections**
The Prefix of an Election’s History

Elections: 2517
Successful: 0.496

- **OPPOSE**
  - Elections: 685
  - Successful: 0.042
    - **OPPOSE**
      - Elections: 555
      - Successful: 0.007
    - **SUPPORT**
      - Elections: 130
      - Successful: 0.192
  - **SUPPORT**
    - Elections: 1832
    - Successful: 0.665
      - **OPPOSE**
        - Elections: 237
        - Successful: 0.127
      - **SUPPORT**
        - Elections: 1595
        - Successful: 0.745

- **OPPOSE**
  - Elections: 491
  - Successful: 0.000
- **SUPPORT**
  - Elections: 64
  - Successful: 0.063
The Experiment
Dynamics of Elections over Time

The Prefix of an Election’s History

- **Elections:** 2517
  - **Successful:** 0.496

- **OPPOSE**
  - **Elections:** 685
    - **Successful:** 0.042
      - **OPPOSE**
        - **Elections:** 555
          - **Successful:** 0.007
        - **SUPPORT**
          - **Elections:** 130
            - **Successful:** 0.192
      - **SUPPORT**
        - **Elections:** 1832
          - **Successful:** 0.665

- **SUPPORT**
  - **Elections:** 1595
    - **Successful:** 0.745
  - **OPPOSE**
    - **Elections:** 237
      - **Successful:** 0.127
    - **SUPPORT**
      - **Elections:** 128
        - **Successful:** 0.328
      - **SUPPORT**
        - **Elections:** 1467
          - **Successful:** 0.782

Ferry Abt  (University Konstanz)  Governance in Social Media  Wiki collaboration networks
The Prefix of an Election’s History

- **Elections:** 2517
  - **Successful:** 0.496
  - **OPPOSE:**
    - **Elections:** 685
      - **Successful:** 0.042
      - **OPPOSE**
        - **Elections:** 555
          - **Successful:** 0.007
        - **SUPPORT**
          - **Elections:** 130
            - **Successful:** 0.192
      - **SUPPORT**
        - **Elections:** 1832
          - **Successful:** 0.665
          - **OPPOSE**
            - **Elections:** 237
              - **Successful:** 0.127
            - **SUPPORT**
              - **Elections:** 1595
                - **Successful:** 0.745
        - **SUPPORT**
          - **Elections:** 128
            - **Successful:** 0.328
          - **SUPPORT**
            - **Elections:** 1467
              - **Successful:** 0.782

- **OPPOSE**
  - **Elections:** 555
    - **Successful:** 0.007
  - **SUPPORT**
    - **Elections:** 130
      - **Successful:** 0.192

- **SUPPORT**
  - **Elections:** 1832
    - **Successful:** 0.665
The Influence of Timing on Successful Elections

The figure shows the dynamics of elections over time, focusing on the influence of timing. The graphs illustrate the final fraction of support votes against the index of the oppose vote. The graphs capture the fluctuations and trends in support across different time indices, highlighting the importance of timing in election outcomes.
Conclusion

- Voters assess candidates on their relative attributes, i.e.
  - number of edits
  - number of barnstars
- Especially critical towards similar users
- Voters prefer candidates they know
- Averaging very dangerous because of diversity in voter’s behavior
Conclusion

- “Anti-herding”: More motivated to voice anti-mainstream opinions
- Involved & experienced users (admins and frequent voters) vote early
- Unsuccessful elections start positive but decline very fast
  Successful elections are stable
- Unsuccessful elections are shorter/have less participation
- The order of early votes has influence on the outcome:
  SUPPORT → OPPOSE → . . . is less likely to succeed
- Timing influences unsuccessful elections more than successful ones
Discussion

- What data is actually used?
- Research questions vs random exploration
- Over 3 years: Did the behavior change?
- Avg successful: 52.2 supt.; 3.1 opp.; 1.5 neut. ⇒ 94.7% supt. votes 94.4%/91.9%
  Avg failed: 11.9 supt.; 12.5 opp.; 3.3 neut. ⇒ 31% supt. votes 48.8%/43.0%
- Comments on votes/changed opinion
- Failed although high support vote fraction?
- Administrators vs unsuccessful candidates vs other users
- Barnstar suspiciously conspicuous
- Number of talks vs number of words exchanged
- Participation vs support: variation
- Support per election-category over time: mind the index
- History Prefix: Investigation
- Timing in successful elections: heavily successful ones only
Discussion

General

- No statistics, only visual exploration ⇒ Pre-study
- Correlation vs causality (e.g. relative merit vs attributes + administrator-behavior)
- Univariate functions only
- Too few metric
- Data is heavily skewed (Averaging, unsuccessful elections cut short)
- “Apply models”?
- Vote early vs vote late?