



# The role of Experts in the era of online mass collaboration: evidence from collective intelligence experiments

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# Agenda

1. The death of Expertise in the digital era: what's going wrong?
  - ▣ The age of misinformation: Fake news is not the only problem!
  - ▣ Echo chambers, Polarization & Radicalization
  - ▣ Flawed search
2. When can crowds be smart? When they aren't?
3. Improving the quality of online debate through distributed decision support systems: evidence and implications from an experiment of e-democracy

# The age of misinformation



Agenda

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▶ Section 1

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Testing Economic and Environmental Resilience

[Digital Wildfires in a Hyperconnected World](#)

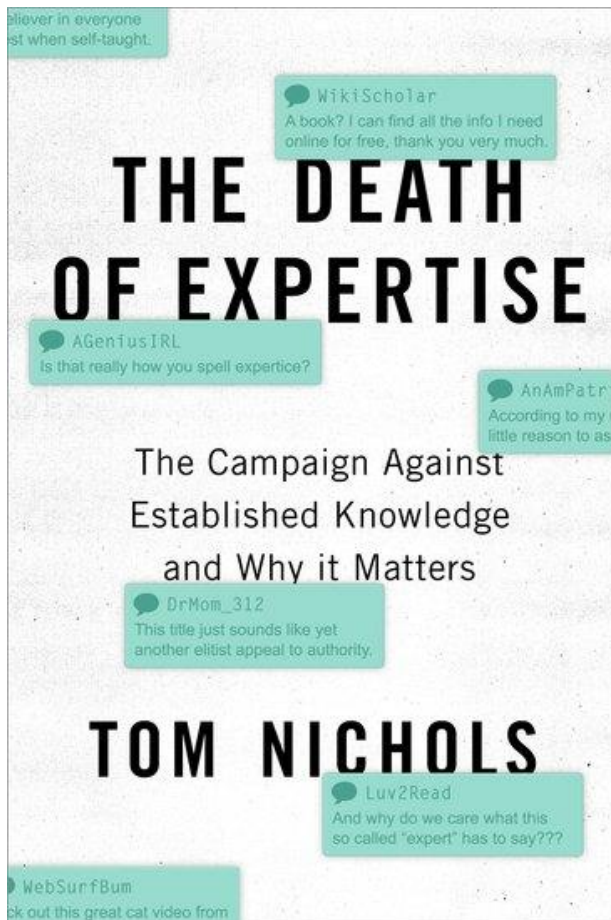
The Dangers of Hubris on Human Health

## Digital Wildfires in a Hyperconnected World

The global risk of massive digital misinformation sits at the centre of a constellation of technological and geopolitical risks ranging from terrorism to cyber attacks and the failure of global governance. This risk case examines how hyperconnectivity could enable “digital wildfires” to wreak havoc in the real world. It considers the challenge presented by the misuse of an open and easily accessible system and the greater danger of misguided attempts to prevent such outcomes. [See Figure 11](#)

In 1938, when radio had become widespread, thousands of Americans confused an adaptation of the H.G. Wells novel *The War of the Worlds* with a news broadcast and jammed police station telephone lines in the panicked belief that the United States had been invaded by Martians.

# The death of expertise



I fear we are witnessing *the death of the ideal of expertise* itself, a Google-fueled, Wikipedia-based, blog-sodden collapse of any division between professionals and laypeople, students and teachers, knowers and wonderers.

...

[Internet] allows people to mimic intellectual accomplishment by indulging in an illusion of expertise provided by a limitless supply of facts



Gilad Lotan [Follow](#)

Head of Data Science @buzzfeed| previously @betaworks, @microsoft | Adjunct Professor @NYU | ...  
Nov 23, 2016 · 11 min read

## Fake News Is Not the Only Problem

Bias, propaganda, and deliberately misleading information are much more prevalent and do more damage.

...

**Points:** *Buckle up for a longer than usual Points post, friends (and don't worry, there are lots of illustrations). Gilad Lotan, Chief Data Scientist at betaworks, chaperones us through some trends in how conversation and attention are being shaped online and argues they present a larger problem than "fake news." How can the ideal of an informed public be defended?—Ed.*

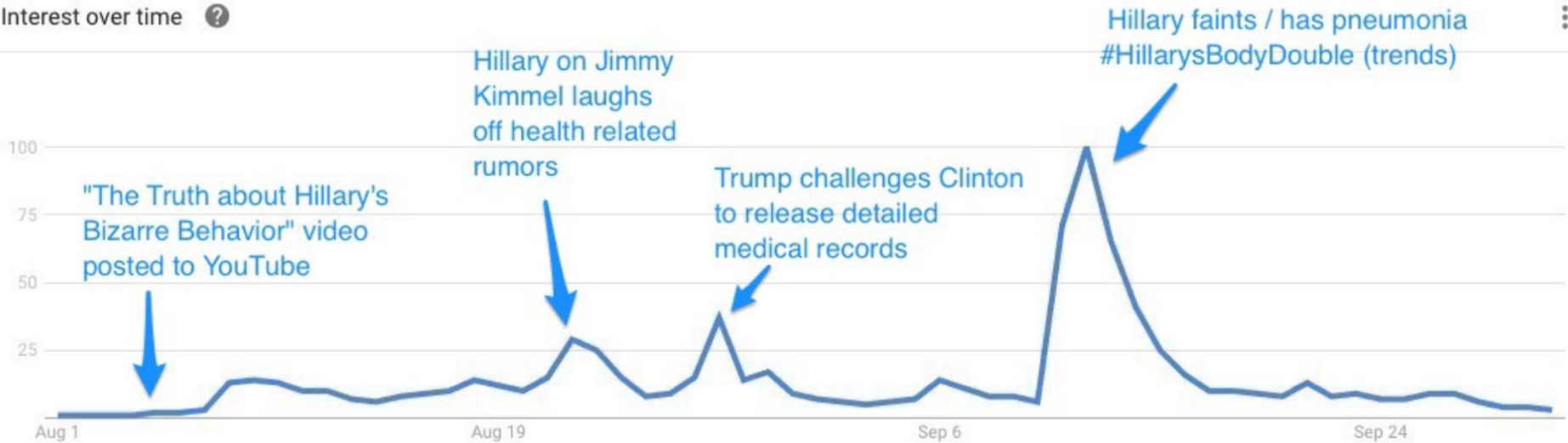
# Age of misinformation

## The Curious case of Hillary's health



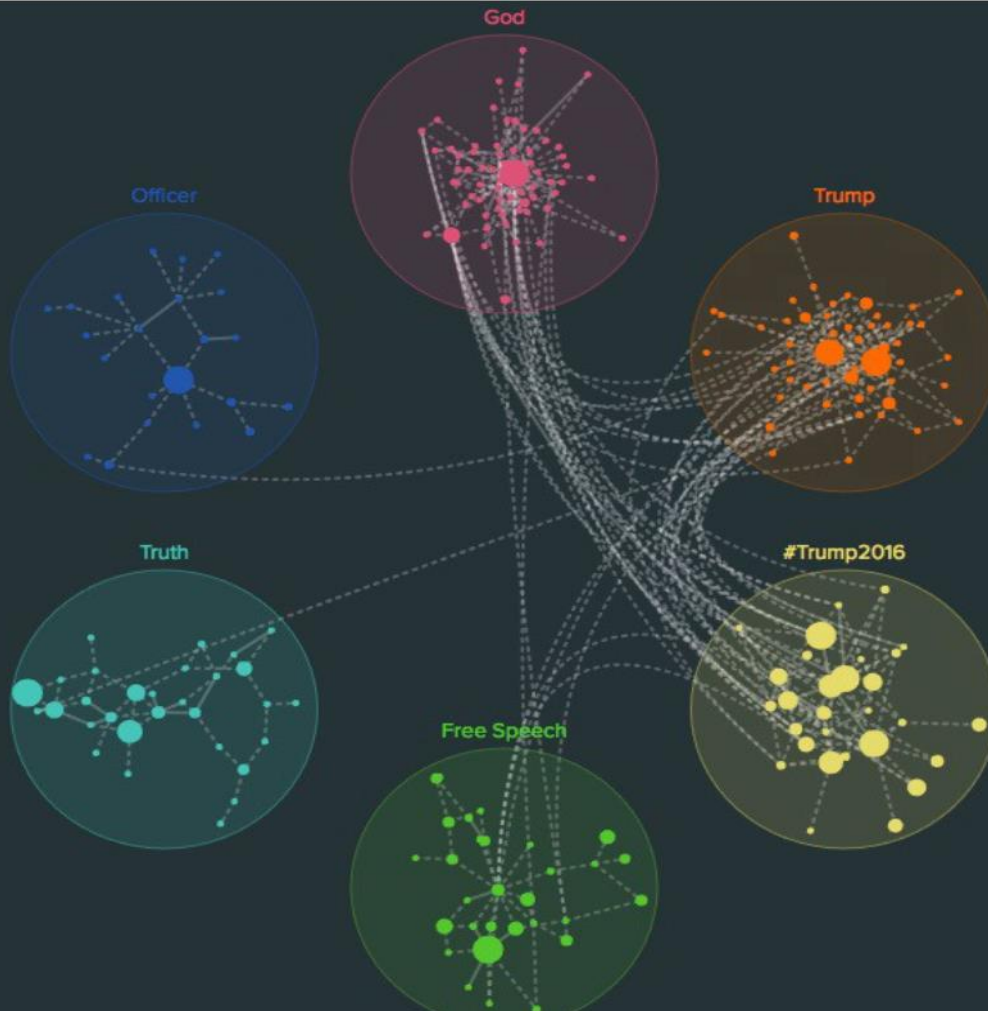
The Truth About Hillary's Bizarre Behavior

Interest over time ?



<https://points.datasociety.net/fake-news-is-not-the-problem-f00ec8cdfcb#.93ztcymwt>

# Echo chambers, polarization, radicalization



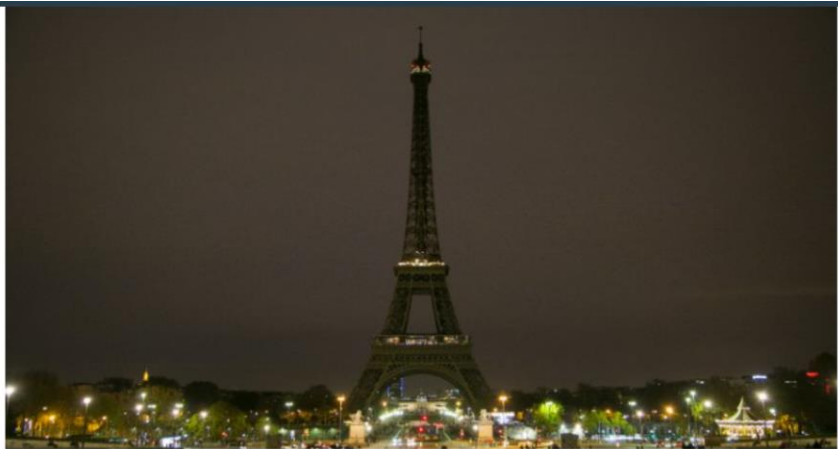
News consumption on the Internet cohabits with, peer-to-peer co-creation of pseudo-knowledge that **spreads, evolves, and persists** in communities of like minded individuals



## Polarization



# Echo chambers, polarization, radicalization



Photos: Getty Images

## Why They Hate Us

Published on November 14, 2015 | Featured in: [Alerts](#), [Editor's Picks](#), [Global Trade](#), [Law & Government](#)



Cass Sunstein [fluencer](#) | [Follow](#)  
Professor at Harvard; Co-Author, "Wiser: Getting Beyond..."



2,173



1,096



9

Attacks to disrupt social networks enabling diffusion of misinformation and injection of true knowledge do not fix the issue

## Polarization may lead to radicalization

### Trend of Narratives in the Age of Misinformation

Alessandro Bessi, Fabiana Zollo, Michela Del Vicario, Antonio Scala, Guido Caldarelli, Walter Quattrociocchi

Published: August 14, 2015 • <http://dx.doi.org/10.1371/journal.pone.0134641>

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Abstract

Introduction

Results and Discussion

Conclusions

Methods

Acknowledgments

Author Contributions

References

Reader Comments (0)

Media Coverage (0)

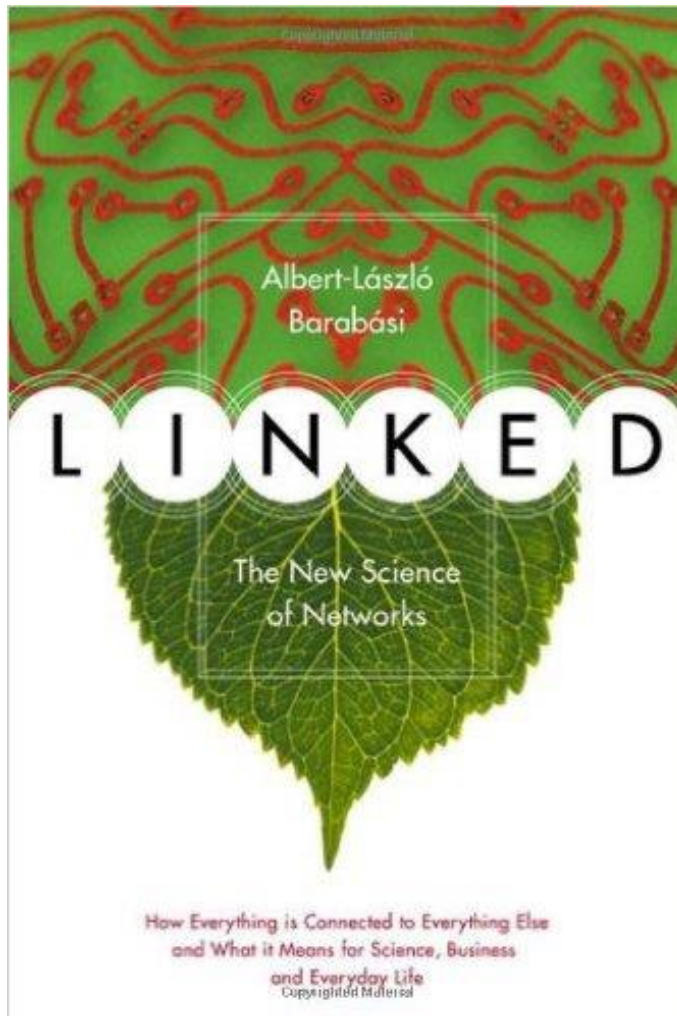
Figures

### Abstract

Social media enabled a direct path from producer to consumer of contents changing the way users get informed, debate, and shape their worldviews. Such a *disintermediation* might weaken consensus on social relevant issues in favor of rumors, mistrust, or conspiracy thinking—e.g., chem-trails inducing global warming, the link between vaccines and autism, or the New World Order conspiracy. Previous studies pointed out that consumers of conspiracy-like content are likely to aggregate in homophile clusters—i.e., echo-chambers. Along this path we study, by means of a thorough quantitative analysis, how different topics are consumed inside the conspiracy echo-chamber in the Italian Facebook. Through a semi-automatic topic extraction strategy, we show that the most consumed contents semantically refer to four specific categories: *environment*, *diet*, *health*, and *geopolitics*. We find similar consumption patterns by comparing users activity (likes and comments) on posts belonging to these different semantic categories. Finally, we model users mobility across the distinct topics finding that the more a user is active, the more he is likely to span on all categories. Once inside a conspiracy narrative users tend to embrace the overall corpus.



# Flawed search



Preferential attachment (the tendency to link with the most linked nodes) creates scale-free networks in which few nodes have unusually high degree as compared to the other nodes of the network



**“Truth” emerges by consensus and popularity**

# When can crowds be smart?

## Markets



Under perfect market assumption price reflects the best available information provided by competent traders



**Prediction markets**

# When can crowds be smart?

## Crowdsourcing



Tasks are broken down into small modular units which can be easily reassembled

# When can crowds be smart?

## Open Source (Linus' Law)

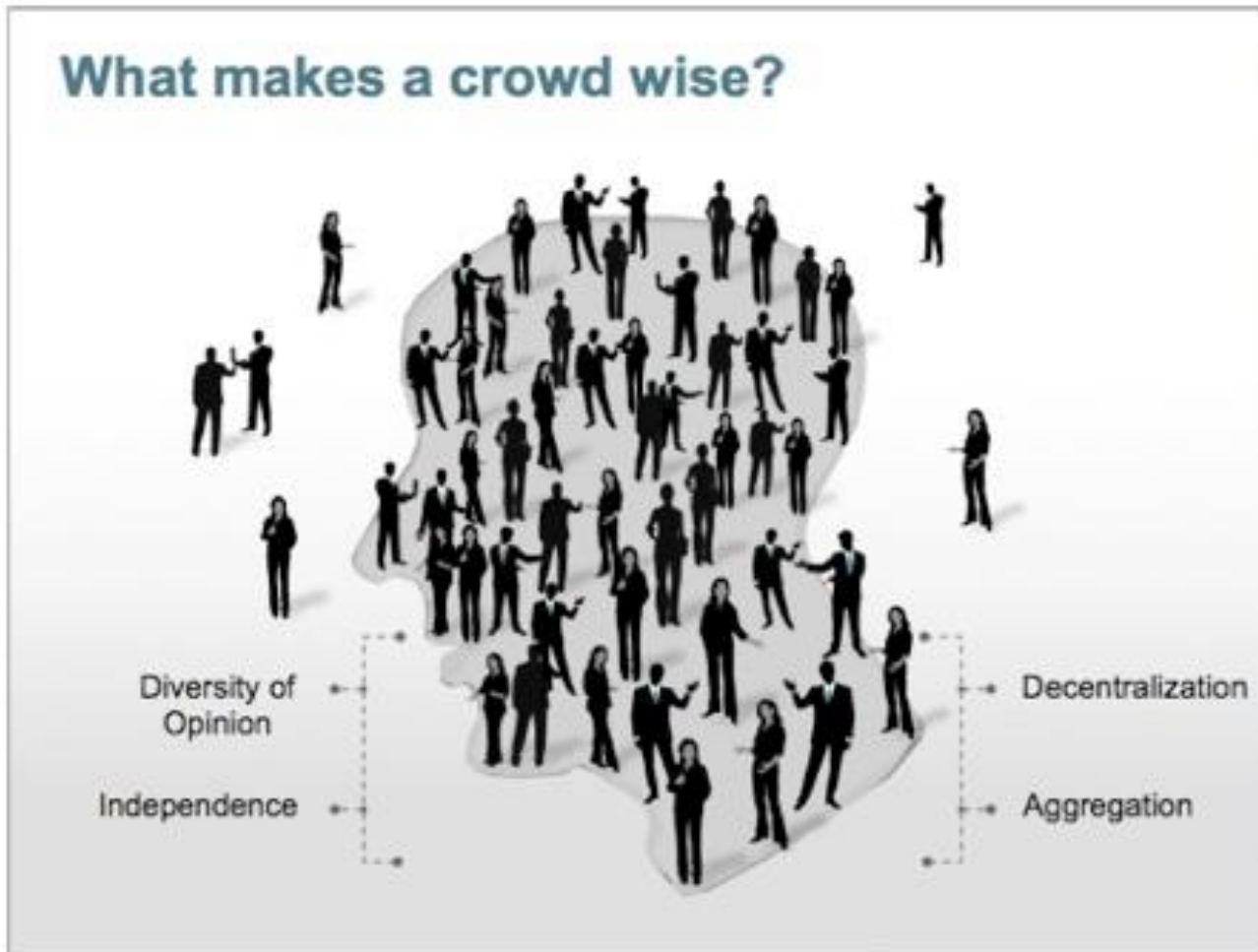
Given enough eyeballs, all bugs are shallow

If you want to have good ideas you must have many ideas

(Linus Torvalds)



# When crowds are not smart?





# When crowds aren't smart?

- ▣ Debate on value-based, controversial issues
- ▣ Vetting information (opinions VS facts)
- ▣ Building explanations (e.g. conspiracy theories)

# Evidence from an e-democracy experiment

## Research Questions

- How to improve the quality of online debate without suppressing participation?
- Can we achieve these results through the design of better collaborative decision support tools?



# Field study

Empirical study in collaboration with a large Italian political party in an Intra-party Deliberative Referendum

(Iandoli, et al. "Supporting argumentation in online political debate: Evidence from an experiment of collective deliberation." *New Media & Society* (2017))



(Source: <https://www.irit.fr/~Umberto.Grandi/e-democracy2017/>)

## Which type of electoral system should Italy adopt?

# Evidence from an e-democracy experiment

640 volunteers and 10 moderators randomly assigned to two groups using different platforms debating for three weeks

Forum

VS

Argumentation Platform  
(Collaboratorium)

sulla legge elettorale (f1)

Chatroom Suggestions Search Activity Profile Library Feedback Help Logout

**Library**  
In questa finestra trovi una serie di link a pagine che contengono materiali informativi sui vari sistemi elettorali.

[I sistemi elettorali più utilizzati nel mondo](#)  
[Articoli e materiali a favore dei sistemi proporzionali](#)  
[Articoli e materiali a favore dei sistemi maggioritari](#)  
[Articoli e materiali a favore di altri sistemi](#)

**Quale legge elettorale per l'Italia?**

In questa discussione puoi proporre la legge elettorale che ritieni più adatta per il parlamento ed il senato italiano. Sotto ciascun sistema elettorale puoi aggiungere domande, argomenti a favore, argomenti contro. L'elenco di tutte le proposte generate nella discussione entra nella scheda elettorale della Dopunta. Per qualunque dubbio riguardo a come utilizzare il software consulta l'help o chiedi aiuto ad un moderatore nella chatline.

Mark Klein (sysadmin)  
3/23/2012 at 0:27:42 am

**Forums**

| Nome                                                        | #  | Latest                   |
|-------------------------------------------------------------|----|--------------------------|
| Per il Sindaco d'Italia                                     | 13 | 4/18/2012 at 11:28:23 am |
| Primarie obbligatorie per legge?                            | 15 | 4/21/2012 at 8:00:55 pm  |
| Quale legge elettorale? Una legge elettorale "NUOVA"        | 18 | 4/21/2012 at 9:27:07 pm  |
| Sistema ABC                                                 | 16 | 4/20/2012 at 11:07:26 am |
| sistema doppio turno maggioritario "alla francese"          | 15 | 4/15/2012 at 3:42:15 pm  |
| Punti che vorremmo avere qualunque sia il sistema prescelto | 47 | 4/18/2012 at 12:04:21 pm |
| Il sistema proporzionale puro                               | 23 | 4/19/2012 at 10:00:48 am |
| Benvvenuti... I primi passi contro il Porcellum!            | 34 | 4/14/2012 at 6:07:38 pm  |
|                                                             | 16 | 4/4/2012 at 3:00:19 pm   |

sulla legge elettorale (m1)

Chatroom Suggestions Search Activity Profile Library Feedback Help Logout

**Library**  
In questa finestra trovi una serie di link a pagine che contengono materiali informativi sui vari sistemi elettorali.

**Deliberation**

[I sistemi elettorali più utilizzati nel mondo](#)  
[Articoli e materiali a favore dei sistemi proporzionali](#)  
[Articoli e materiali a favore dei sistemi maggioritari](#)  
[Articoli e materiali a favore di altri sistemi](#)

**Quale legge elettorale per l'Italia?**

**La soluzione possibile**

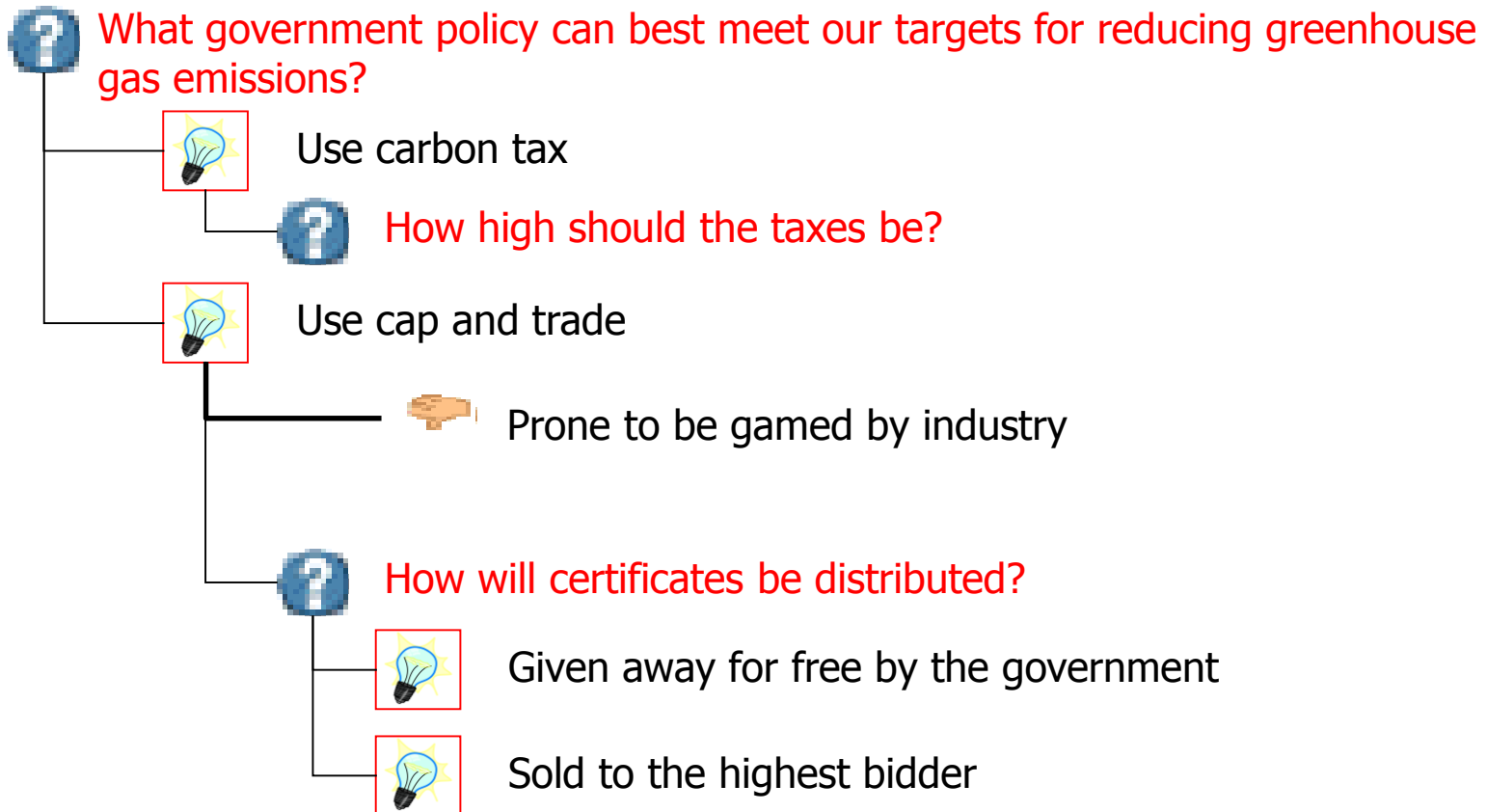
Dal dibattito sulla riforma della legge elettorale, è stato completamente espulsa ogni considerazione sul sistema maggioritario uninominale. Eppure si tratta di un sistema molto antico, diffuso, su cui basano la loro rappresentanza numerose democrazie del mondo: Gran Bretagna, Stati Uniti, Francia, India, ...

Sono numerosi i vantaggi del sistema uninominale.

1. Semplicità e chiarezza: chi prende un voto in più vince! Niente scoperti, collegi nazionali, conteggi complicati, ...
2. Forte legame dell'eletto con il territorio: se si divide il numero degli elettori con il numero dei deputati si ottiene un rapporto di circa 70.000 elettori per eletto, più un buon rapporto per permettere ad un eletto di mantenere vivo il suo rapporto con il territorio da cui proviene. Ridurre il numero dei deputati implica necessariamente aumentare il distacco tra l'elettore ed il suo eletto e, simmetricamente, a renderlo più dipendente dal Partito, o dalla sua Segreteria come è più giusto dire. Qualsiasi riforma che diminuisca il numero dei deputati, soprattutto in presenza di un sistema elettorale proporzionale, implica necessariamente separare l'eletto da suo elettorato e consegnarlo alla Segreteria che deciderà della sua scelta politica: come della sua eventuale rielezione non in funzione del suo lavoro legislativo ma del suo appiattimento alle scelte della Segreteria.
3. Riduzione delle spese elettorali. I candidati dovranno concentrare la loro campagna elettorale a territori limitati. Ponderemo poco la televisione ed i giornali nazionali mentre

# Argumentation platforms

Argumentation tools organize discussion as a network consisting of alternative positions, pro or con arguments for the proposed ideas.



# Argumentation platforms

## Problem

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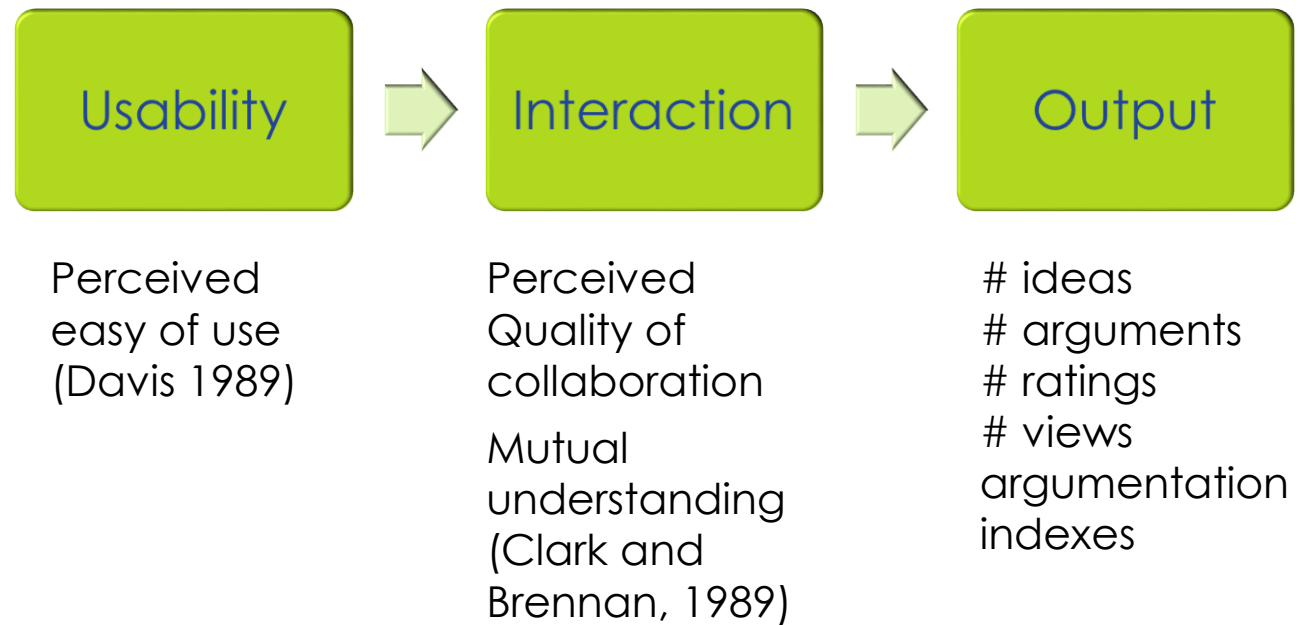
- Controversial issues
- Vetting information
- Explain

## Solution

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- Content is organized around Alternative Positions
- Ideas are vetted through chains of pros and cons
- Participants must disclose rationale and evidence behind their proposals

# Research Hypotheses



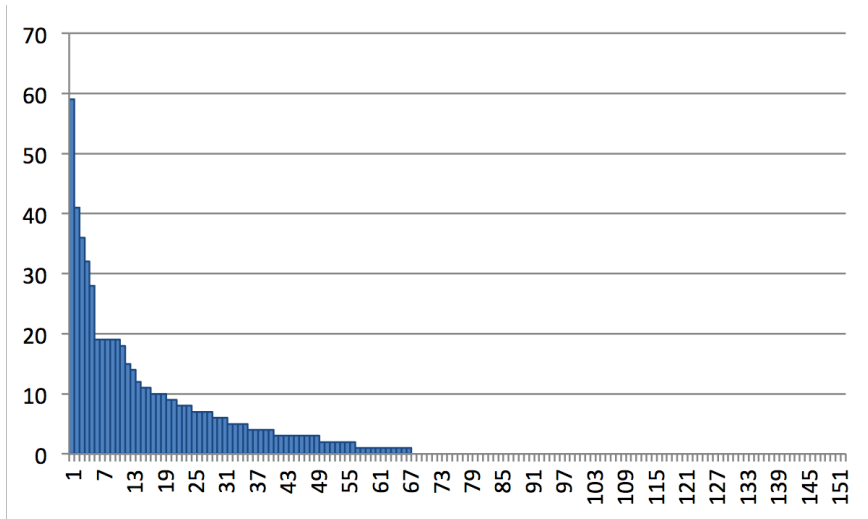
Metrics

# Results

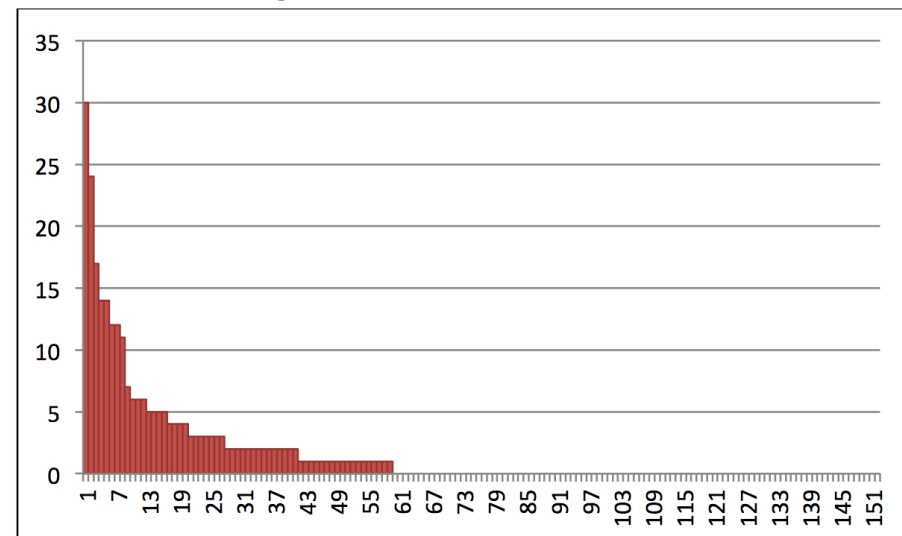
Same level of engagement, retention, and users participation despite the new tool learning curve

## Number of contributions per users

Forum



Argument map



# Results

The forum fares better off on usability and collaboration process

On a 1-7 levels Likert scale

**Table 1:** Grounding Constraints in mediated communication

|                                            | <b>FORUM</b> | <b>CCSAV PLATFORM</b> |
|--------------------------------------------|--------------|-----------------------|
| <i>Mutual Understanding*</i>               | 5.30         | 3.72                  |
| <i>Perceived Quality of Collaboration*</i> | 5.06         | 4.48                  |
| <i>Perceived Ease of Use*</i>              | 4.73         | 3.81                  |
| *p<0.05                                    |              |                       |



# Results

Forum users produced more content but read and rated less other participants' posts

**Table 2:** Average values for the post survey constructs on collaboration process (1 to 7 Likert scale)

|                                                   | <b>FORUM</b> | <b>PLATFORM</b> | <b>F statistic</b> |
|---------------------------------------------------|--------------|-----------------|--------------------|
| <i>Average Published Posts per user</i>           | 3.83         | 1.72            | 7.945*             |
| <i>Average number of Ratings per user</i>         | 2.81         | 5.57            | 5.663*             |
| <i>Average Views per user</i>                     | 44.052       | 50.605          | 0.407              |
| * $F_{\text{tabulated}}(1, 302) = 3.84; p < 0.05$ |              |                 |                    |

# Results

Forum users posted more ideas and pros but argued mainly to support their own ideas (besides, forum ideas turned out to be more redundant)

|                      | <b>FORUM</b> | <b>PLATFORM</b> | <b>F statistic</b> |
|----------------------|--------------|-----------------|--------------------|
| <i>Ideas</i>         | 1.91         | 0.54            | 16.253**           |
| <i>Pros</i>          | 0.95         | 0.47            | 3.835*             |
| <i>Cons</i>          | 0.84         | 0.60            | 0.952              |
| <i>Issues</i>        | 0.13         | 0.11            | 0.64               |
| <i>Self-argument</i> | 0.895        | 0.171           | 9.952**            |
| **p< 0.05, * p<0.1   |              |                 |                    |

# Results

$$\textit{Argumentation Index 1} = \frac{\textit{Pros} + \textit{Cons} + \textit{Issues}}{\textit{Average number of ideas}}$$

$$\textit{Argumentation Index 2} = \frac{\textit{Pros} + \textit{Cons} + \textit{Issues} - \textit{Self-arguments}}{\textit{Average number of ideas}}$$

|                      | <b>FORUM</b> | <b>PLATFORM</b> | <b>F statistic</b> |
|----------------------|--------------|-----------------|--------------------|
| <i>Arg_Indexes 1</i> | 0.94         | 1.99            | 4.922**            |
| <i>Arg_Indexes 2</i> | 0.47         | 1.67            | 9.484**            |
| **p < 0.05           |              |                 |                    |

**Table 5:** Argumentation indexes

Argumentation platform users posted more arguments per idea and were less likely to argue about their own ideas

# Implications for the design of collaborative tools

- In existing online media content production and diffusion are too cheap
- Our study show that making the production of online content **“costly”** through the use of more constraining knowledge formats has a positive impact for the quality of online debate
  - Less proliferation of redundant content
  - Less self-referential arguments
  - More assessment

# Implications for experts in online debate

- Communicate differently: **it's not about knowledge gaps**, it's about enforcing the rules and the formats that are conducive to good discussions
- Engagement and participation, to not mention freedom of speech, should not be limited ...
- ... but reputation systems should be enforced: **one doesn't count one!**
- Expertise as community service, Experts as honest brokers

# (Optimistic) Conclusion: quality of information on the Internet will improve over time

Upon the arrival of Gutenberg's printing press in the 15th century humanists worried that the easy availability of books would lead to intellectual laziness, undermine religious authority, demean the work of scholars and scribes, and spread sedition and debauchery (Carr)

... Then we had publishers, editors, peer to peer review, etc.



# Reference to my work in this area

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# Thank you!

Reference and paper available on request at  
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