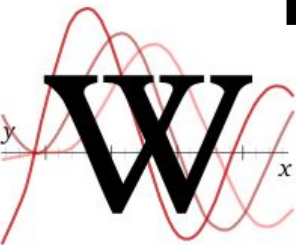
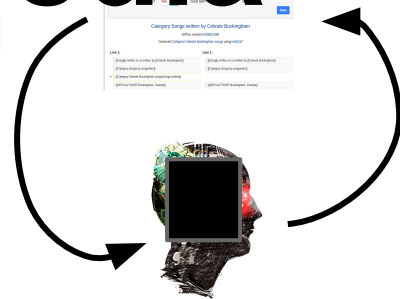


# Engineering at the Intersection of Productive Efficiency, Ideology, and Ethical AI in Wikipedia

Aaron Halfaker  
ahalfaker@wikimedia.org



Wikimedia  
Research



# Aaron Halfaker

Principal Research Scientist, Wikimedia Foundation

*Think big. Measure what you can. Build better technologies.*



## About me

Hi. I'm Aaron Halfaker. I'm a scientist. See [projects](#) and [publications](#) below. I've been a Wikipedian since 2008. I mostly build tools and run studies, but I make edits where I can. In 2011, I started working with the Wikimedia Foundation as a [research scientist](#). This is my staff account. See my volunteer account, [User:EpochFail](#), for my non-staff work.

## My work

My job is to build understanding about and support for the socio-technical fabric of the Wikimedia movement. I tend to focus on our computer mediated spaces (Wikipedia, Commons, Wikidata, Wikisource, etc.) and quality dynamics (patrolling, curation, newcomer training, etc.)

See [The Rise and Decline](#) for an example of my research and [Revision scoring as a service](#) for an example of an experimental technology I'm actively working on.

## Contact me

- E-mail: [ahalfaker@wikimedia.org](mailto:ahalfaker@wikimedia.org)
- Website: <http://halfaker.info>
- Twitter: <http://twitter.com/halfak>
- On IRC, I go by "halfak".

**iD**

This user has the **ORCID identifier**:  
[0000-0001-8907-6367](https://orcid.org/0000-0001-8907-6367)



# Planet Earth

(6.97 billion)

data from March 2012

1:10



data from March 2012



Planet

Earth

(6.97 billion)

1:10



Monthly  
Wikipedia  
Readers  
(500 million)

1:10000



Monthly Wikipedia Editors  
(113,304)

data from March 2012

1:10

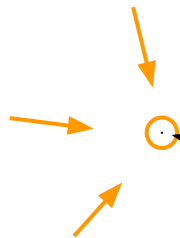


Planet  
Earth  
(6.97 billion)



Monthly  
Wikipedia  
Readers  
(500 million)

1:10000

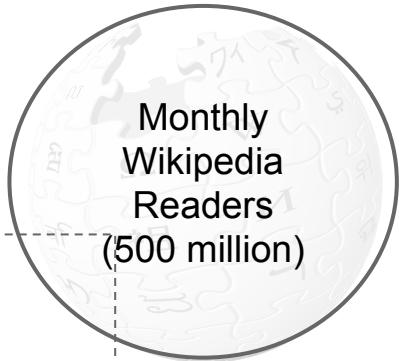


Monthly Wikipedia Editors  
(113,304)

data from March 2012



1:10



1:10000

Monthly Wikipedia Editors  
(113,304)

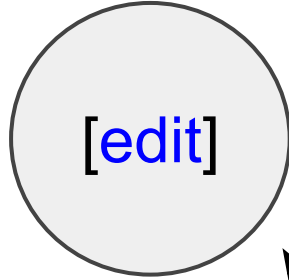


data from March 2012

Wikimedia Foundation Staff  
(~225)



1:1000



1:10,000

Monthly Wikipedia  
Readers (500M)

Monthly Wikipedia Editors  
(100,000)



## Research and Data

Main article: [Wikimedia Research/Research and Data](#)

---



[Aaron Halfaker](#)

Principal Research  
Scientist



[Erik Zachte](#)

Data Analyst



[Leila Zia](#)

Senior Research Scientist



**Wikimedia  
Research**

## Design Research

Main article: [Wikimedia Research/Design Research](#)

---



[Abigail Ripstra](#)

Lead Design Research  
Manager



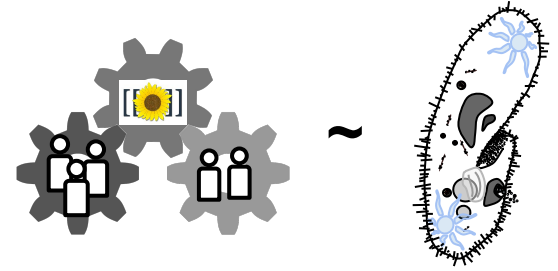
[Jonathan Morgan](#)

Senior Design  
Researcher

**Story Time!**

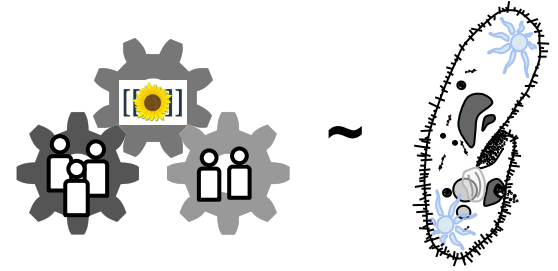
# 1. Wikipedia as a socio-technical system

- Systems-thinking & Biological metaphors



# 1. Wikipedia as a socio-technical system

- Systems-thinking & Biological metaphors



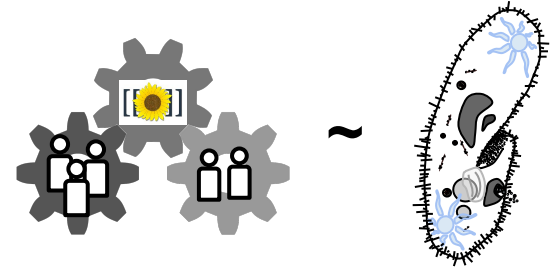
# 2. Critique of algorithmic quality control

- Standpoint epistemology
- Encoding of ideology in technology



# 1. Wikipedia as a socio-technical system

- Systems-thinking & Biological metaphors



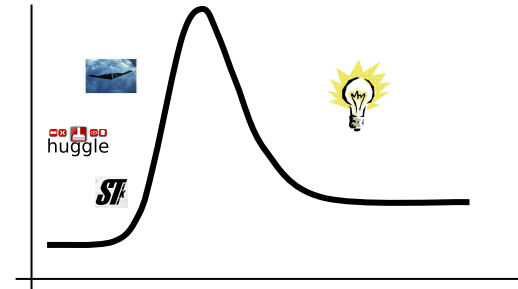
# 2. Critique of algorithmic quality control

- Standpoint epistemology
- Encoding of ideology in technology



# 3. Infrastructure for socio-technical change

- “progress catalyst”
- Hearing to speech vs. Speaking to be heard
- The dangers of “subjective algorithms”



# **Part 1. The socio-technical of Wikipedia**

**What is Wikipedia?**

# The world's largest encyclopedia

WIKIPEDIA

**English**

*The Free Encyclopedia*

4 979 000+ articles

**Deutsch**

*Die freie Enzyklopädie*

1 861 000+ Artikel

**Русский**

*Свободная энциклопедия*

1 257 000+ статей

**中文**

*自由的百科全書*

843 000+ 條目

**Português**

*A enciclopédia livre*

890 000+ artigos

**Español**

*La enciclopedia libre*

1 205 000+ artículos

**日本語**

*フリー百科事典*

985 000+ 記事

**Français**

*L'encyclopédie libre*

1 668 000+ articles

**Italiano**

*L'enciclopedia libera*

1 226 000+ voci

**Polski**

*Wolna encyklopedia*

1 136 000+ haseł



~5 million articles  
in English





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## List of lists of lists

From Wikipedia, the free encyclopedia

Some articles that consist of a list of things are themselves about lists of things, such as the articles in the ***list of lists of lists*** below.

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### A [\[edit\]](#)

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- [Lists of A&M Records artists](#)
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- [Lists of Americans](#)
- [Lists of Armenians](#)
- [Lists of atheists](#)
- [Lists of Australian rules football leagues](#)
- [Lists of Australians](#)
- [Lists of abbreviations](#)



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## Lists of ancient kings

From Wikipedia, the free encyclopedia

The following are **lists of ancient kings** of ancient states:

- [List of pharaohs](#)
- [Abydos King List](#)
- [Turin King List](#)
- [Karnak king list](#)
- [Sumerian King List](#)
- [First Babylonian Dynasty](#)
- [List of Assyrian kings](#)
- [List of Roman emperors](#)
- [List of Byzantine emperors](#)
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  - Čeština

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# List of pharaohs

From Wikipedia, the free encyclopedia

 This article **needs additional citations for verification**. Please help [improve this article](#) by adding citations to reliable sources. Unsourced material may be [challenged](#) and [removed](#). *(March 2012)*

This article contains a **list of the pharaohs of Ancient Egypt**, from the [Early Dynastic Period](#) before 3100 BC through to the end of the [Ptolemaic Dynasty](#), when [Egypt](#) became a province of [Rome](#) under [Augustus Caesar](#) in 30 BC.

Note that the dates given are approximate. The list of pharaohs presented below is based on the [conventional chronology of Ancient Egypt](#), mostly based on the [Digital Egypt for Universities](#) database developed by the [Petrie Museum of Egyptian Archaeology](#), but alternative dates taken from other authorities may be indicated separately.

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- 1 Existing primary old lists of pharaohs
- 2 Legendary period
- 3 Archaic period
  - 3.1 Early Dynastic: Upper Egypt
  - 3.2 First Dynasty
  - 3.3 Second Dynasty
- 4 Old Kingdom
  - 4.1 Third Dynasty
  - 4.2 Fourth Dynasty
  - 4.3 Fifth Dynasty
  - 4.4 Sixth Dynasty
- 5 First Intermediate Period

**Pharaoh of Egypt**  
FORMER MONARCHY



The Pschent combined the Red Crown of Lower Egypt and the White Crown of Upper Egypt.





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# Ptah

From Wikipedia, the free encyclopedia

*For the asteroid, see 5011 Ptah.*

In **Egyptian mythology**, **Ptah** (/pəˈtɑː/<sup>[1]</sup> *Egyptian: *ptḥ**, probably vocalized as *Pitaḥ* in ancient Egyptian)<sup>[2]</sup> is the **demiuurge** of Memphis, god of craftsmen and architects. In the triad of **Memphis**, he is the spouse of **Sekhmet** and the father of **Nefertum**. He was also regarded as the father of the sage **Imhotep**.

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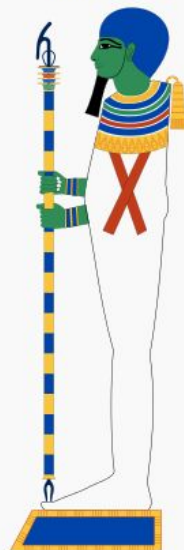
## Origin and symbolism [\[ edit \]](#)

Ptah is the **Creator god** par excellence: He is considered the **demiuurge** who existed before all other things, and by his willfulness, *thought* the world. It was first conceived by Thought, and realized by the Word: *Ptah conceives the world by the thought of his heart and gives life through the magic of his Word*. That which Ptah commanded was created, with which the constituents of nature, fauna, and flora, are contained. He also plays a role in the preservation of the world and the permanence of the royal function.

In the **Twenty-Fifth Dynasty**, the **Nubian** pharaoh **Shabaka** would transcribe

### Ptah

**God of creation, the arts, fertility and of craftsmen**



Ptah, in the form of a mummified man, standing on the symbol for Ma'at, holding a scepter or staff that bears the combined ankh-djed-was symbols.

Name in



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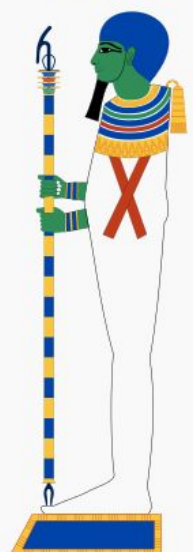
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Ptah, in the form of a mummified man, standing on the symbol for Ma'at, holding a scepter or staff that bears the combined ankh-djed-was symbols.

Name in 𓆎 𓆏 𓆑

# A wiki



- Anyone can edit
- Shared authorship

## **Flipped publication model**

- publish first
- review later (maybe)



# An online community

- ~100k active volunteer editors



WikiProject Video Games

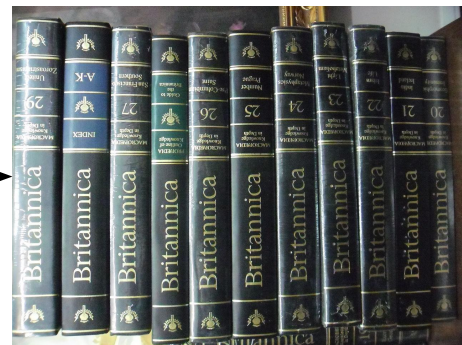
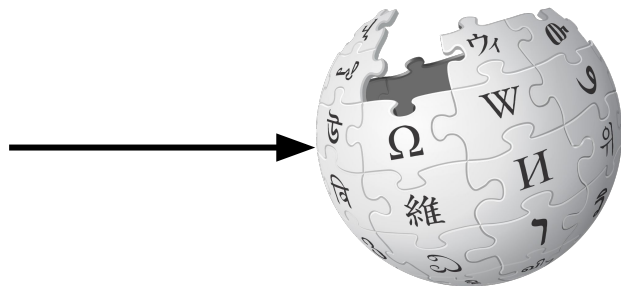
Village pump sections				
 <p><b>Policy</b> watch </p> <p>To discuss existing and proposed policies</p>	 <p><b>Technical</b> watch </p> <p>To discuss technical issues. For <a href="#">wiki</a> software bug reports, use <a href="#">Phabricator</a></p>	 <p><b>Proposals</b> watch </p> <p>To discuss <b>new</b> proposals that are not policy-related. See also: <a href="#">perennial proposals</a> and <a href="#">persistent proposals</a>.</p>	 <p><b>Idea lab</b> watch </p> <p>To discuss ideas before proposing them to the community and attempt to find solutions to issues</p>	 <p><b>Miscellaneous</b> watch </p> <p>To post messages that do not fit into any other category</p>



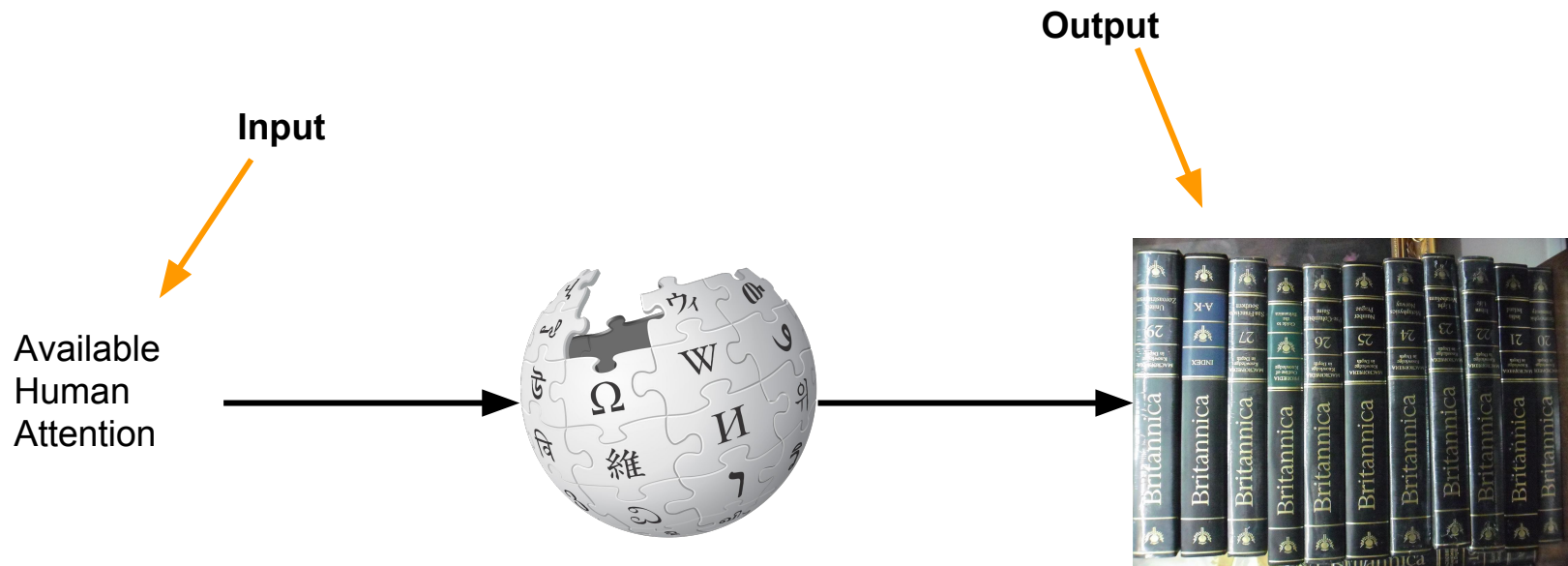
WikiProject Medicine

# A system

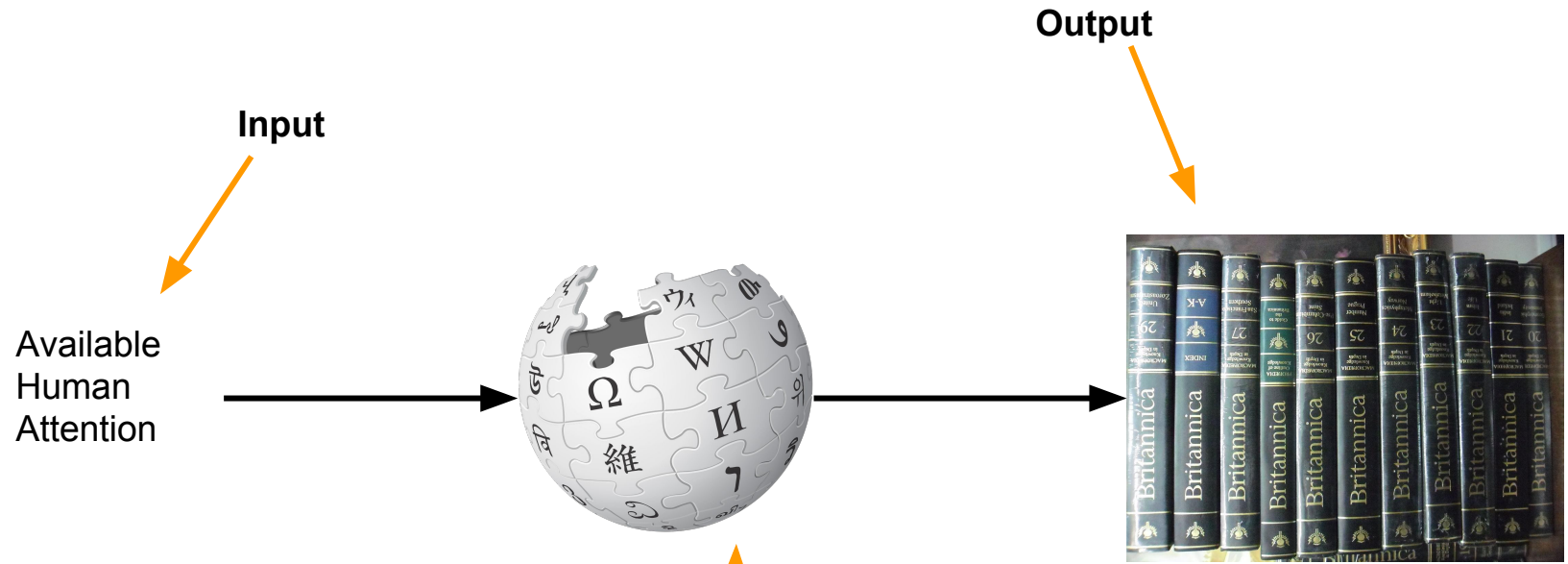
Available  
Human  
Attention



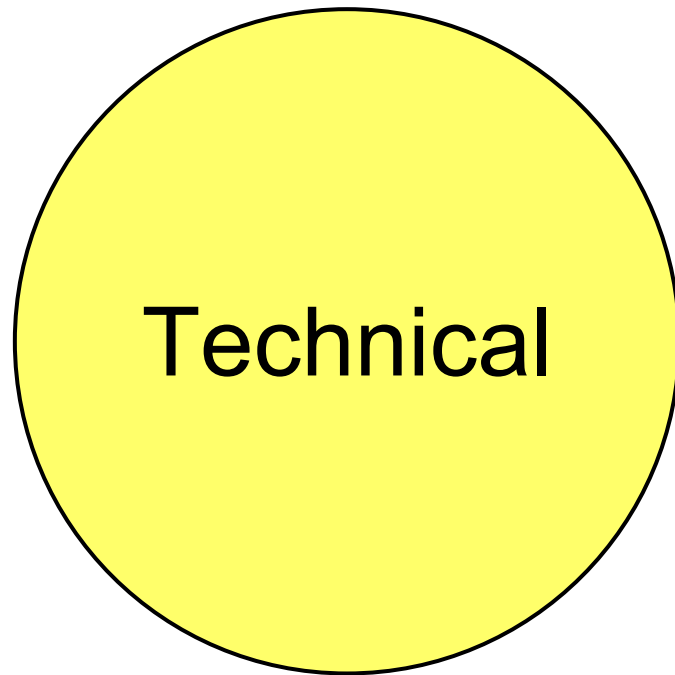
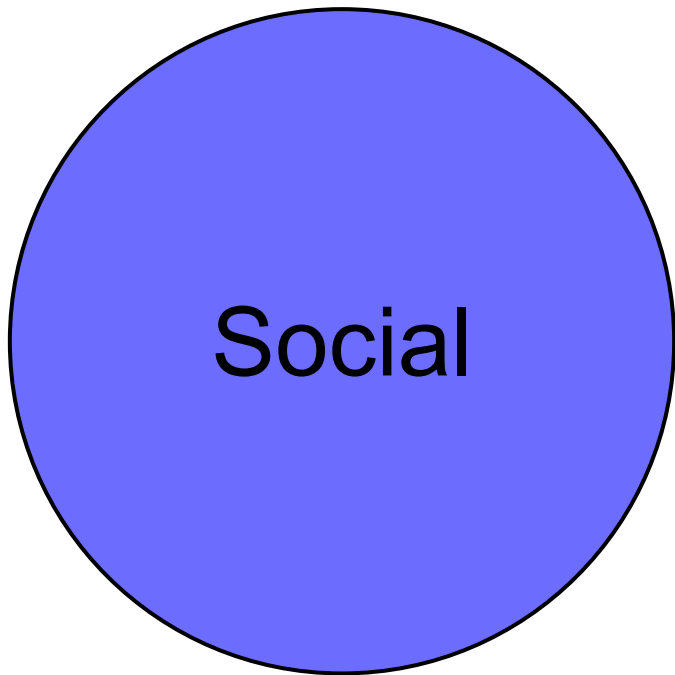
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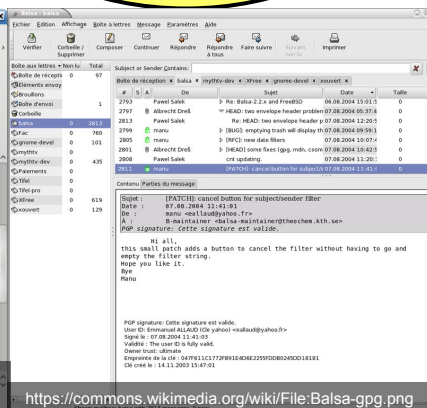
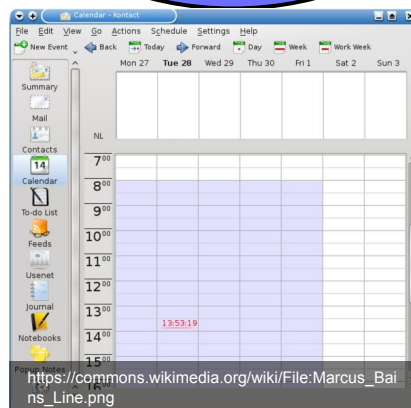
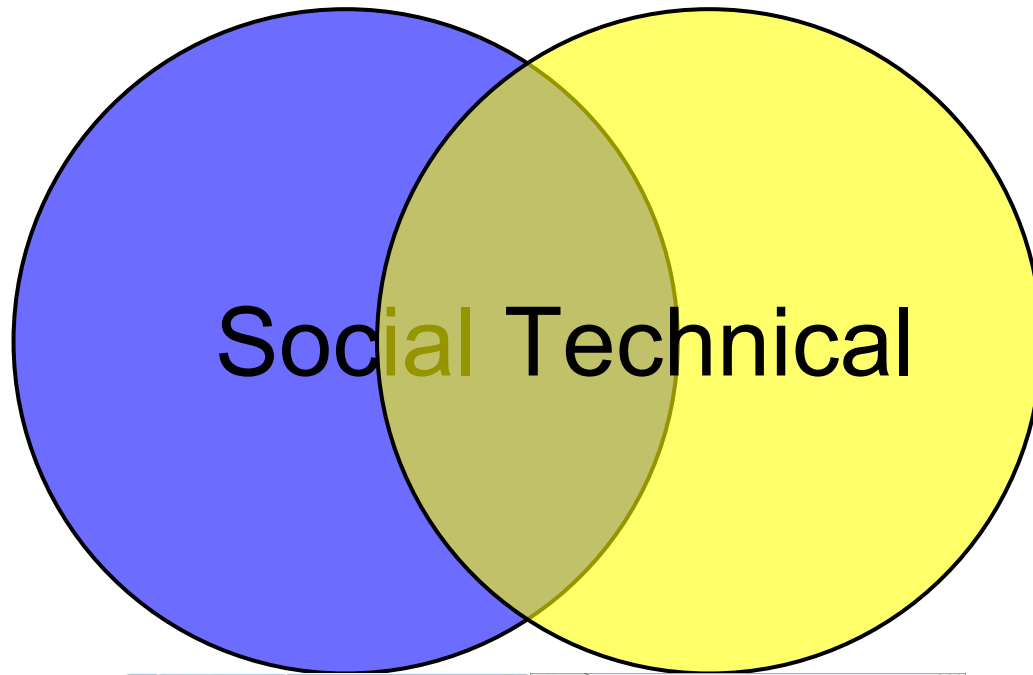


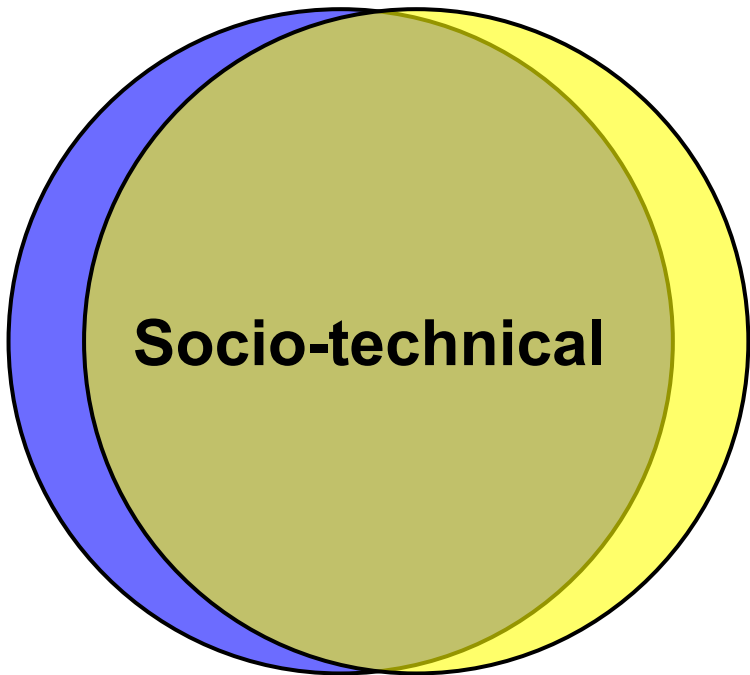
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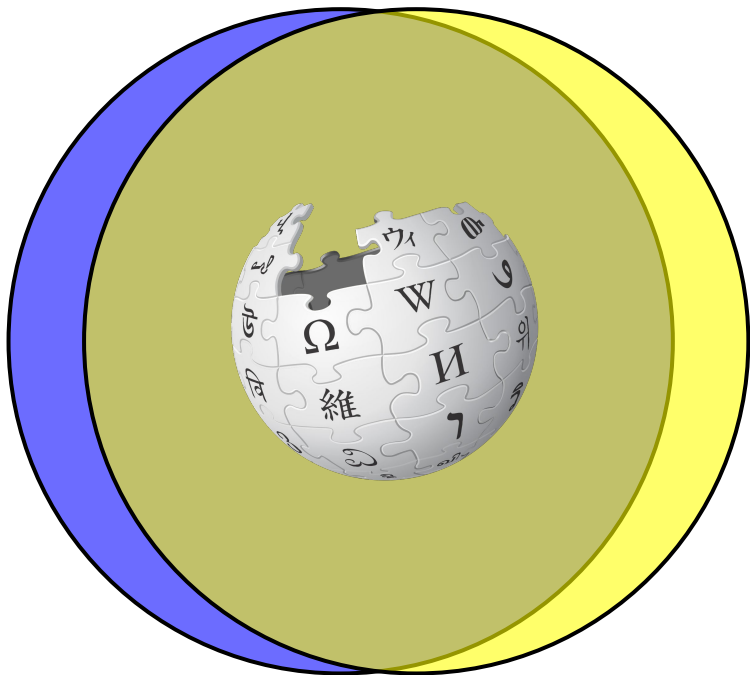
Socio-technical





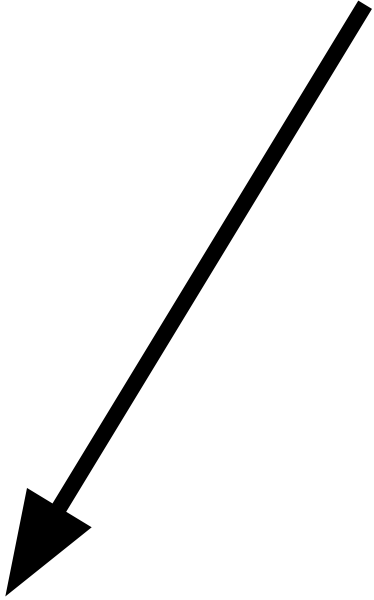


**Socio-technical**

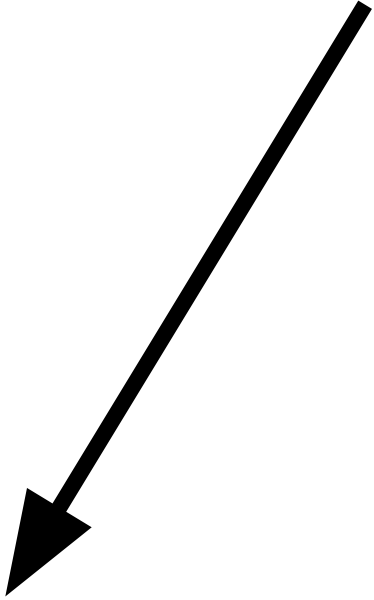




# Technologist

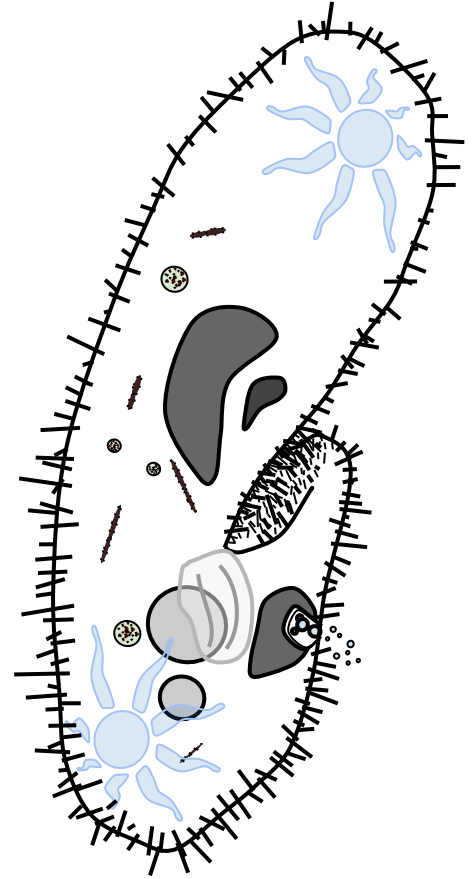


# Techno-biologist?

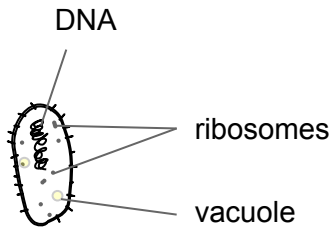




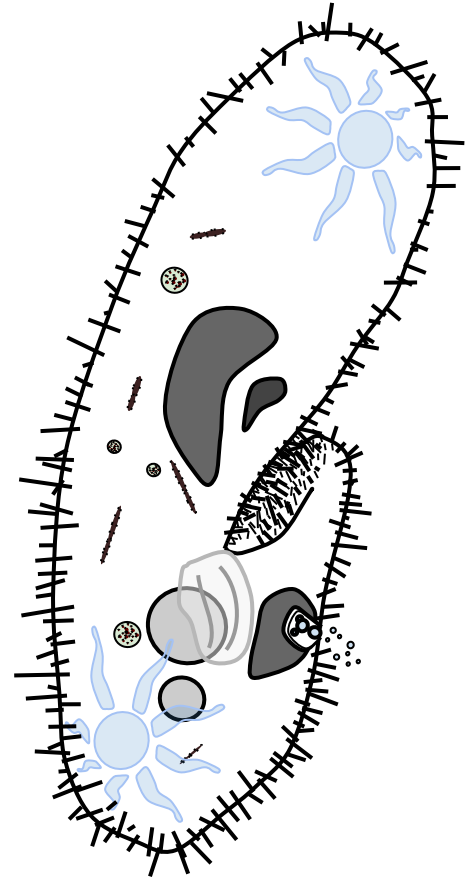
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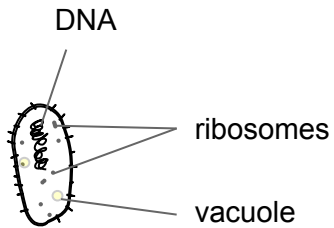
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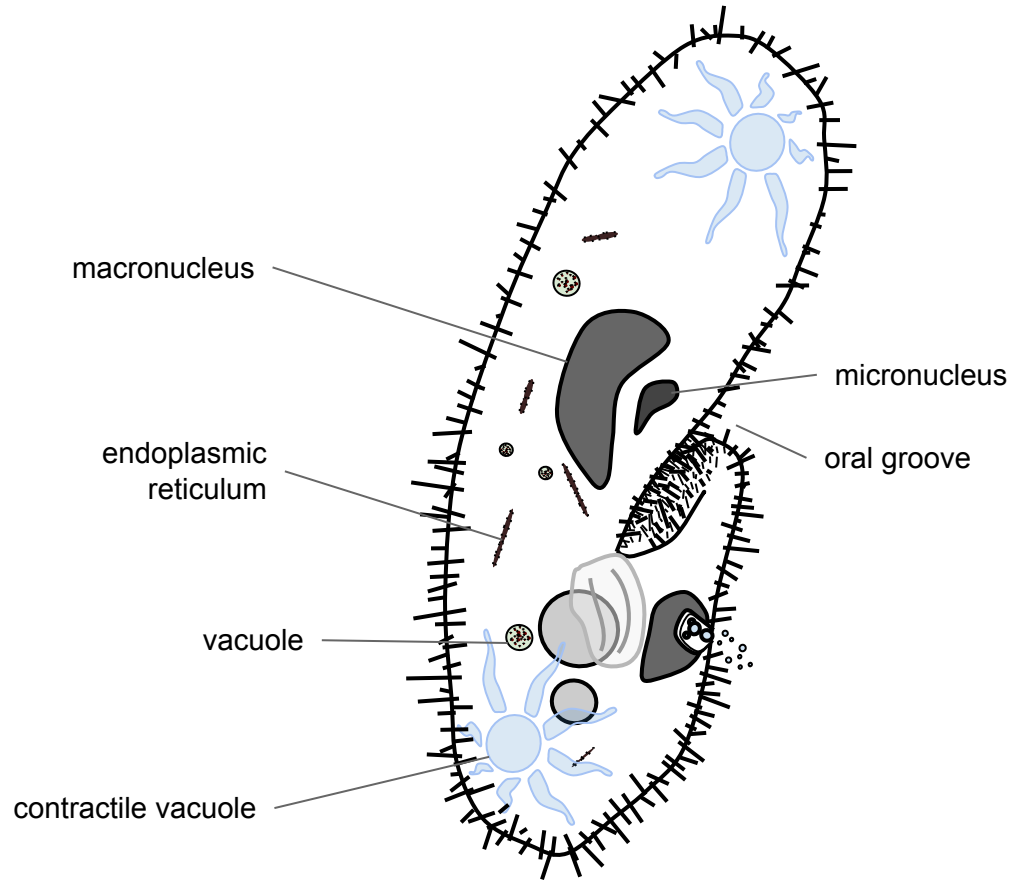
**Bacterium**



**Paramecium**



**Bacterium**



**Paramecium**



**Bacterium**



**Paramecium**





Dunbar's number: ~150



**Bacterium**

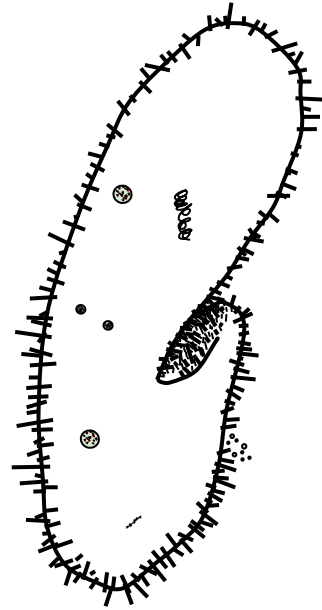


**Paramecium**

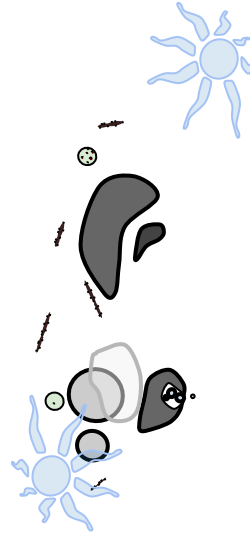




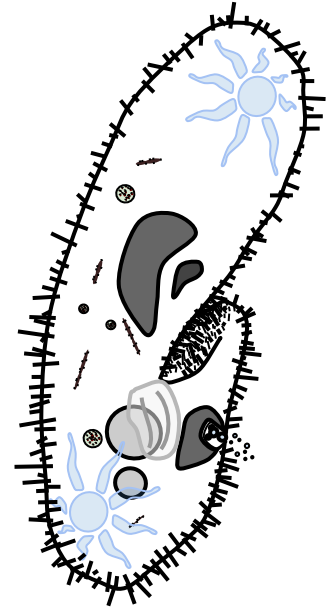
**Bacterium**



**Bare-amecium**



**Organelles**



**Paramecium**



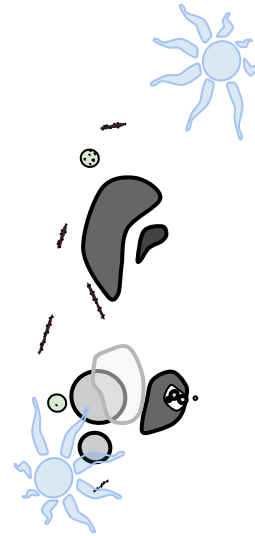
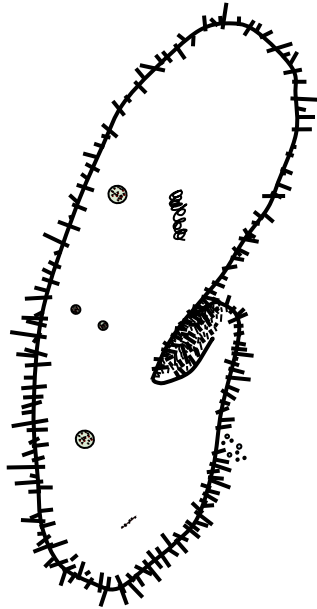
Policies &  
Guidelines

Robots  
& tools



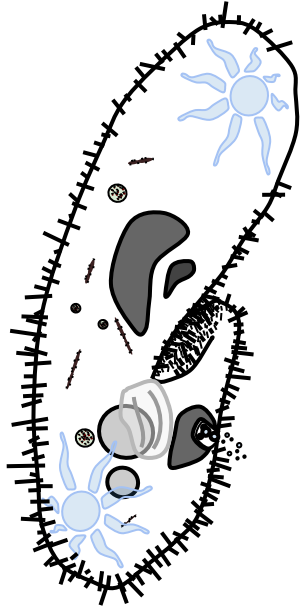


# socio - technical

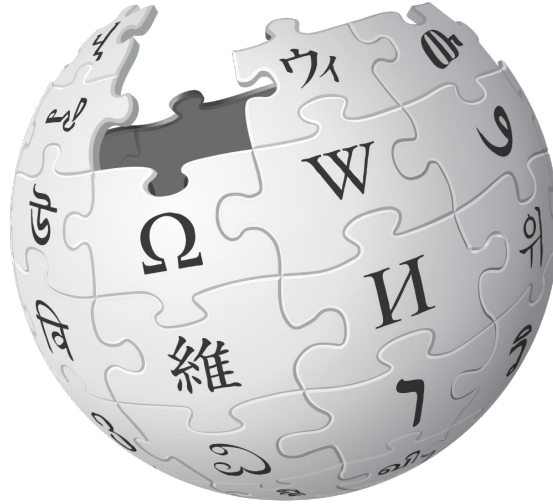


# socio-technical

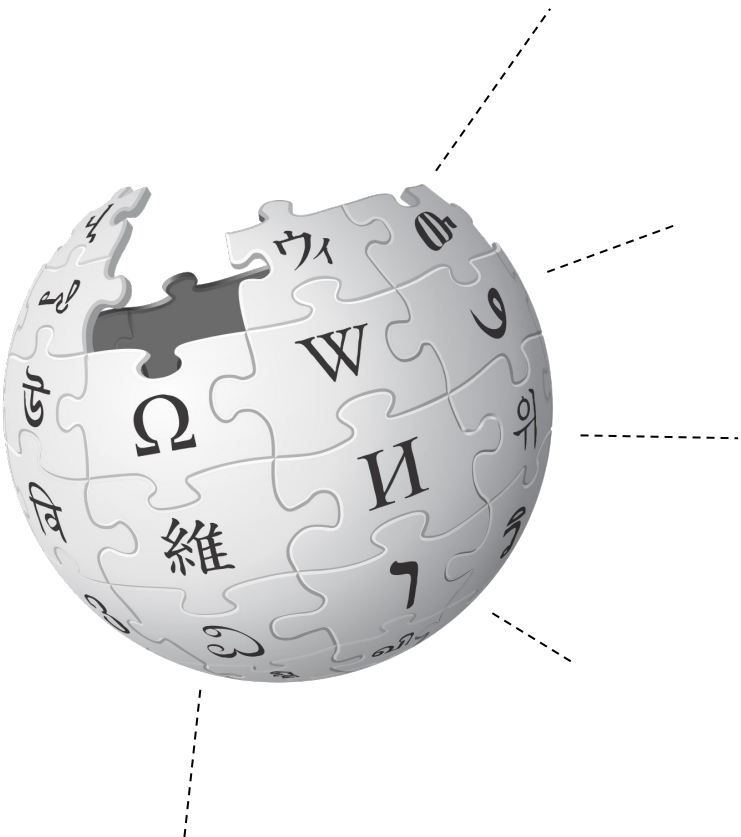




System with specialized  
**sub-systems**

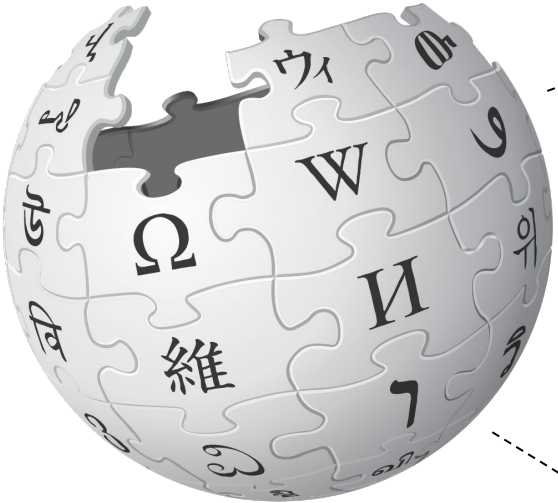


System with specialized  
**sub-systems**



# Work allocation

- Identify, prioritize and assign tasks



# Work allocation

- Largely for free due to Linus' Law

# Linus's Law?



# Linus's Law?



Eric  
Raymond



# Linus's Law?

*“given enough eyeballs, all bugs are shallow”*

# Linus's Law?

*“given enough eyeballs, all bugs are shallow”*

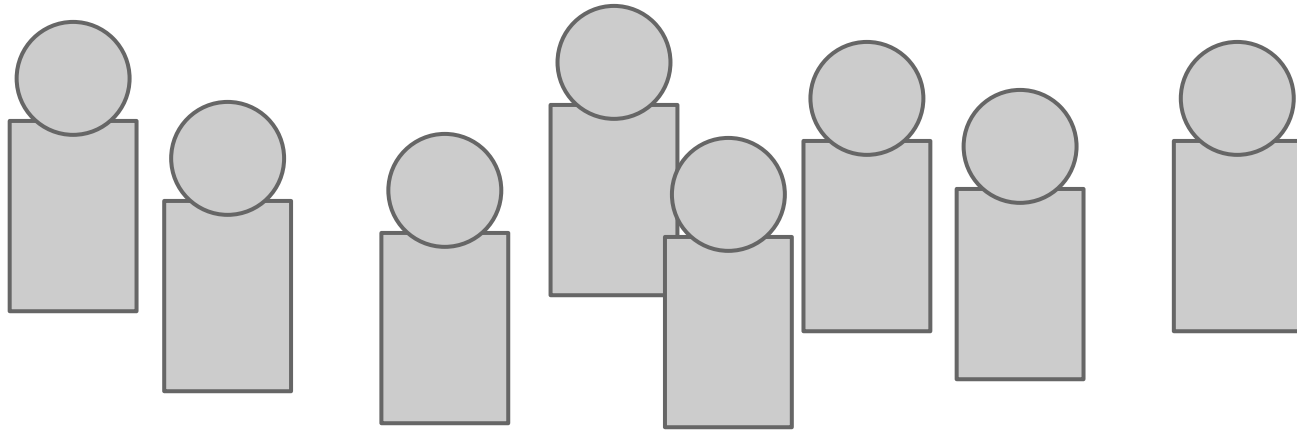


yessss...

bugssss....

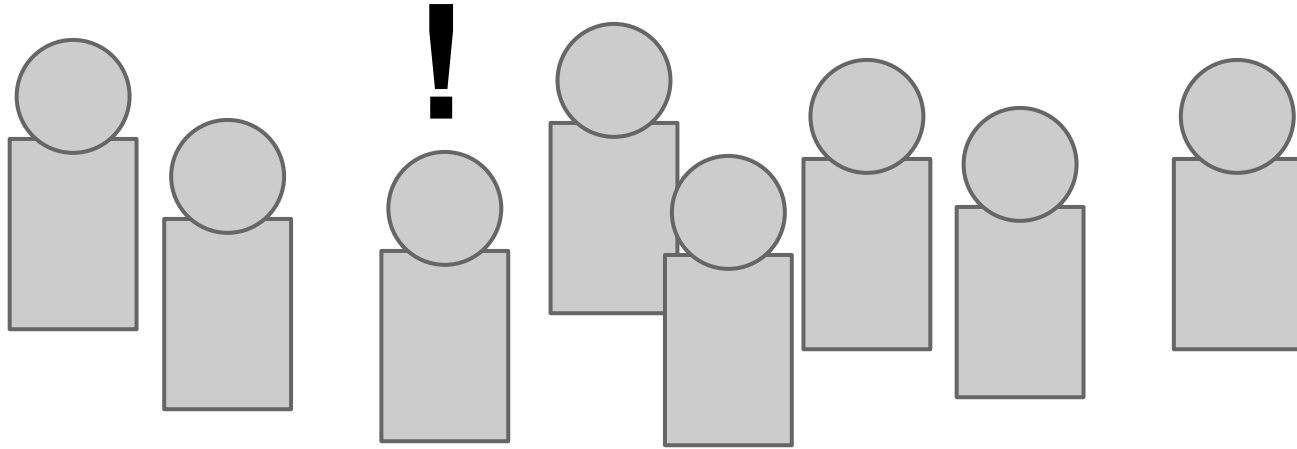
# Linus's Law?

*“given enough eyeballs, all bugs are shallow”*



# Linus's Law?

*“given enough eyeballs, all bugs are shallow”*

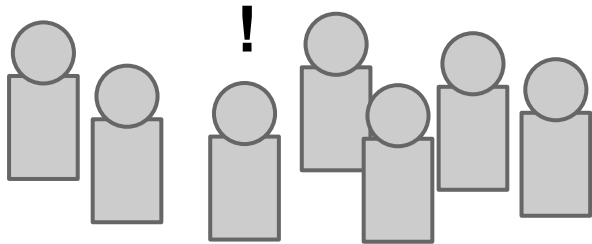


# Linus's Law?

visibility is critical to **open** collaboration

# A corollary for Wikipedia

Given that enough people see an incomplete article, all potential contributions to that article will be easy for someone.



**Works in theory** -- Stvilia, B., et al. (2008). Information quality work organization in Wikipedia. *JASIST*, 59(6), 983-1001.

**Part of becoming a Wikipedian** -- Bryant, S. L., Forte, A., & Bruckman, A. (2005, November). Becoming Wikipedian. *GROUP* (pp. 1-10). ACM.

**We can support visibility with technology** -- Cosley, D., et al. (2007, January). SuggestBot: using intelligent task routing to help people find work in wikipedia. *IUI* (pp. 32-41). ACM.

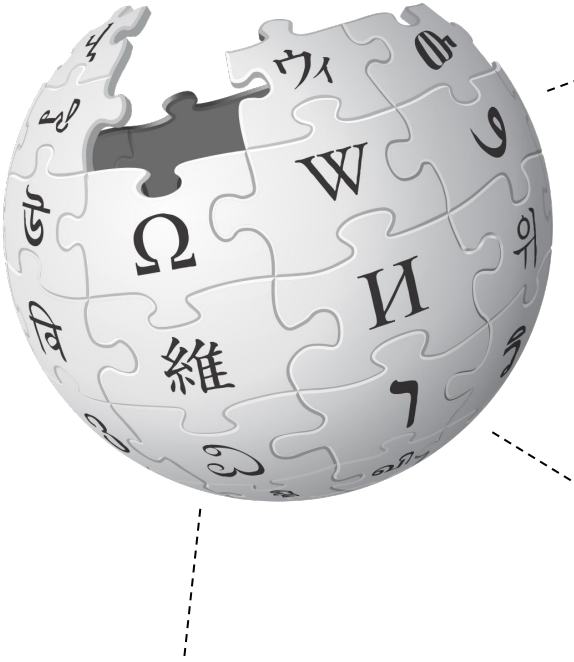
**Bad things happen when we take it away** -- Schneider, J., et al. (2014, August). Accept, decline, postpone. *OpenSym*(p. 26). ACM.

## Work allocation

- Identify, prioritize and assign tasks

## Regulation of behavior

- Norm formation, propagation and enforcement



wikipedia governance



About 37,400 results (0.07 sec)

### [Decentralization in Wikipedia governance](#)

[A Forte](#), [V Larco](#), [A Bruckman](#) - *Journal of Management Information ...*, 2009 - ME Sharpe

How does "self-governance" happen in **Wikipedia**? Through in-depth interviews with 20 individuals who have held a variety of responsibilities in the English-language **Wikipedia**, we obtained rich descriptions of how various forces produce and regulate social structures ...

Cited by 107 [Related articles](#) [All 5 versions](#) [Cite](#) [Save](#)

[PDF] from andreatorte.net

[CITATION] Unpacking **Wikipedia governance**: The emergence of a bureaucracy of peers?

[A Aaltonen](#), [GF Lanzara](#) - *LAEMOS, Buenos Aires. http://www.egosnet.org/jart/ ...*, 2010

Cited by 11 [Related articles](#) [Cite](#) [Save](#)

[CITATION] Is something fundamentally wrong with **Wikipedia governance** processes?

[M Bauwens](#) - ... -*fundamentally-wrong-with-wikipedia-governance-* ..., 2008

Cited by 6 [Related articles](#) [Cite](#) [Save](#)

### [Governance, organization, and democracy on the Internet: The iron law and the evolution of Wikipedia](#)

[P Konieczny](#) - *Sociological Forum*, 2009 - *Wiley Online Library*

This study examines whether the Iron Law of Oligarchy exists in **Wikipedia** by analyzing how a key policy of the website regarding verifiability evolved into its current form. The study describes the decision-making processes of **Wikipedia** and shows that there are many ...



[Coordination and beyond: social functions of groups in open content production](#)

[PDF] from andreaforte.net

[A Forte](#), [N Kittur](#), [V Larco](#), [H Zhu](#), [A Bruckman](#)... - Proceedings of the ..., 2012 - dl.acm.org

... In our first round of interviews, we sought to understand **governance** in **Wikipedia** as a site-wide phenomenon. As such, we interviewed eleven individuals who had been involved in the site for many years, in many different capacities ...

Cited by 13 Related articles All 5 versions Cite Save

[Making restitution work: the challenge of building sustainable governance and institutional structures in public administration](#)

[PDF] from 137.215.9.22

[L Schoeman](#), [DJ Fourie](#) - Journal of Public Administration: ..., 2008 - reference.sabinet.co.za

... **Wikipedia**. 2008. **Governance**. Encyclopaedia **Wikipedia**. Available online: <http://en.wikipedia.org/wiki/governance> [Accessed 25 February 2008]. **Wikipedia**. 2008. Treaty. Encyclopaedia **Wikipedia**. Available online: <http://en.wikipedia.org/wiki/treaty> [Accessed 25 February 2008]. ...

Cited by 3 Related articles All 5 versions Cite Save

[Changing governance of local economies: Responses of European local production systems](#)

[C Crouch](#), [P Le Galès](#), [C Trigilia](#), [H Voelzkow](#) - OUP Catalogue, 2004 - ideas.repec.org

... specialized manufacturing among small and medium-sized enterprises (SMEs) in France, Germany, Italy, and the United Kingdom, the authors find patterns of economic **governance** far more ... This item is not listed on **Wikipedia**, on a reading list or among the top items on IDEAS. ...

Cited by 157 Related articles All 5 versions Cite Save More

[Foundations of service science management and business](#)

[PDF] from cluteonline.com

[H Katzan](#) - Journal of Service Science (JSS), 2011 - journals.cluteonline.com

... The development of a service context involves the asking of tough questions to examine the strategic goal and objectives of a service organization in order 9 Adapted from the **Wikipedia** articles on strategy and corporate **governance**. Page 9. ...

Cited by 6 Related articles All 5 versions Cite Save

[Building semantic kernels for text classification using wikipedia](#)

[PDF] from edudocs.ru

[P Wang](#), [C Domeniconi](#) - Proceedings of the 14th ACM SIGKDD ..., 2008 - dl.acm.org

... Chief executive officer Shareholder Fiduciary Corporate **governance** Corporation Boards of directors Build Thesaurus from **Wikipedia** Ambiguous Concepts: Puma Puma (Car) "Felidae" Category "Puma" "Cougar" "Mountain Lion" "Ford Vehicles" Category "Puma (Car)" ...

Cited by 121 Related articles All 5 versions Cite Save

**Prescriptive**

Idea for a Norm

**Descriptive**

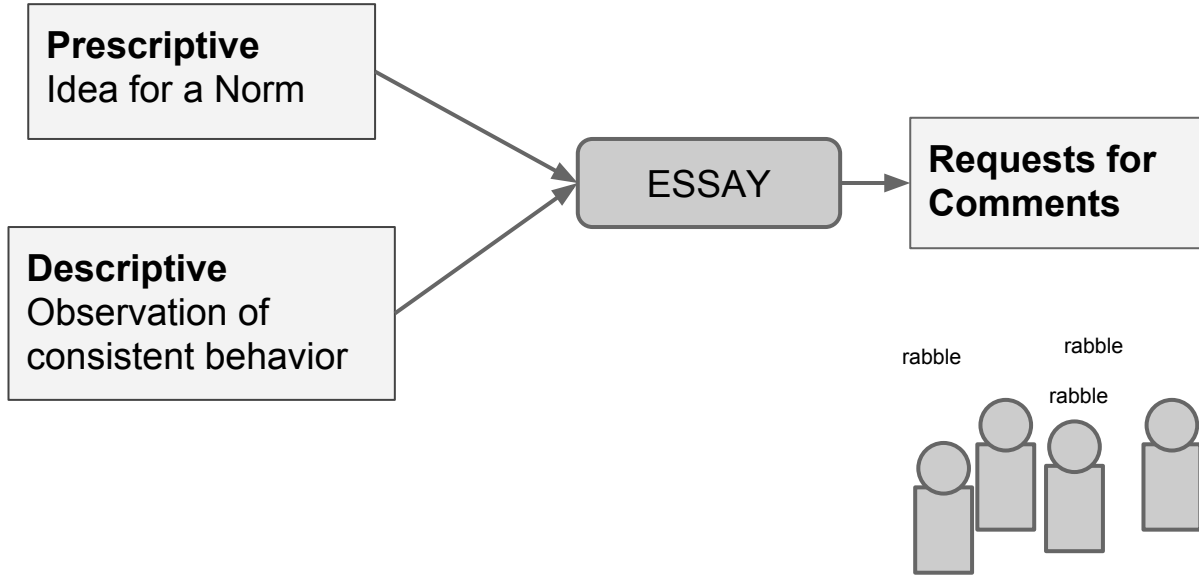
Observation of  
consistent behavior

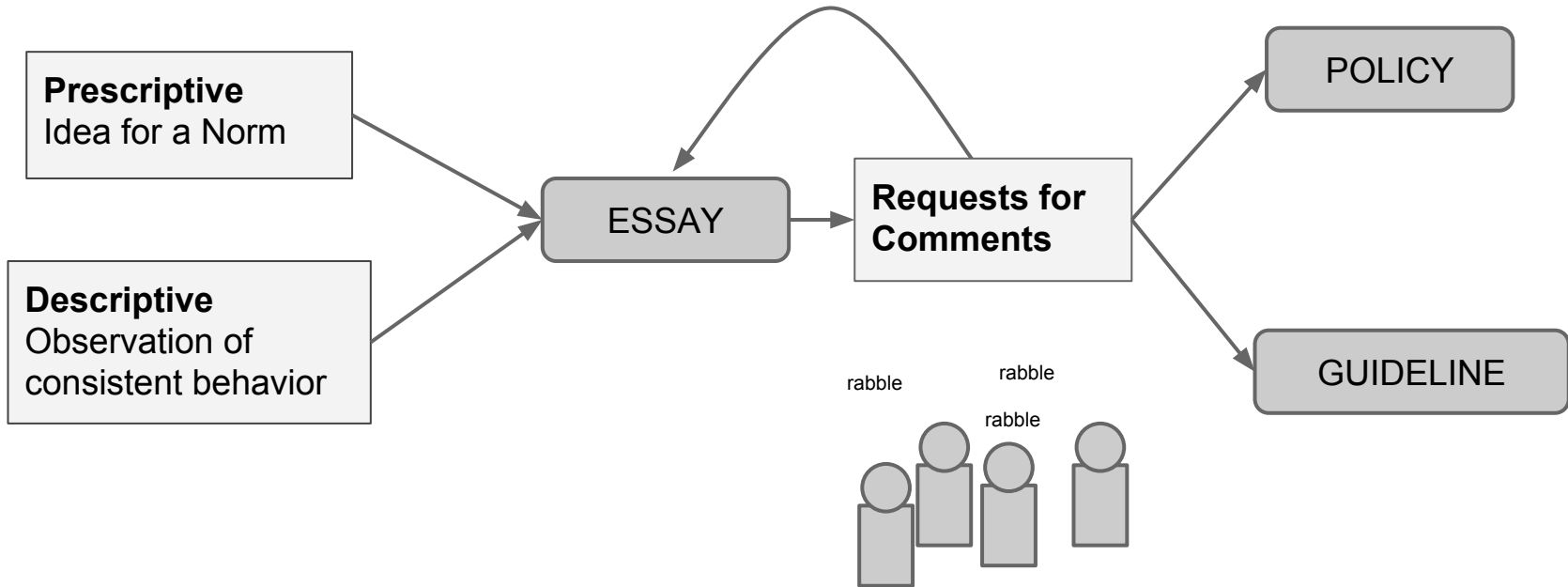
**Prescriptive**  
Idea for a Norm

**Descriptive**  
Observation of  
consistent behavior

ESSAY

```
graph LR; A[Prescriptive  
Idea for a Norm] --> C(ESSAY); B[Descriptive  
Observation of  
consistent behavior] --> C;
```





## Informal

Morgan, J. T., & Zachry, M. (2010, November). Negotiating with angry mastodons: the wikipedia policy environment as genre ecology. In *Proceedings of the 16th ACM international conference on Supporting group work* (pp. 165-168). ACM.

Halfaker, A., Geiger, R. S., Morgan, J. T., & Riedl, J. (2012). The rise and decline of an open collaboration system: How Wikipedia's reaction to popularity is causing its decline. *American Behavioral Scientist*, 0002764212469365.

ESSAY

## Formalized

POLICY

GUIDELINE

## Informal



### Wikipedia:Don't stuff beans up your nose

---

From Wikipedia, the free encyclopedia



This [essay](#) contains the advice or opinions of one or more Wikipedia contributors on Wikipedia:Behavioral policy. Essays are *not* [Wikipedia policies or guidelines](#). Some essays represent widespread norms; others only represent minority viewpoints.

## Formalized

### Wikipedia:Verifiability

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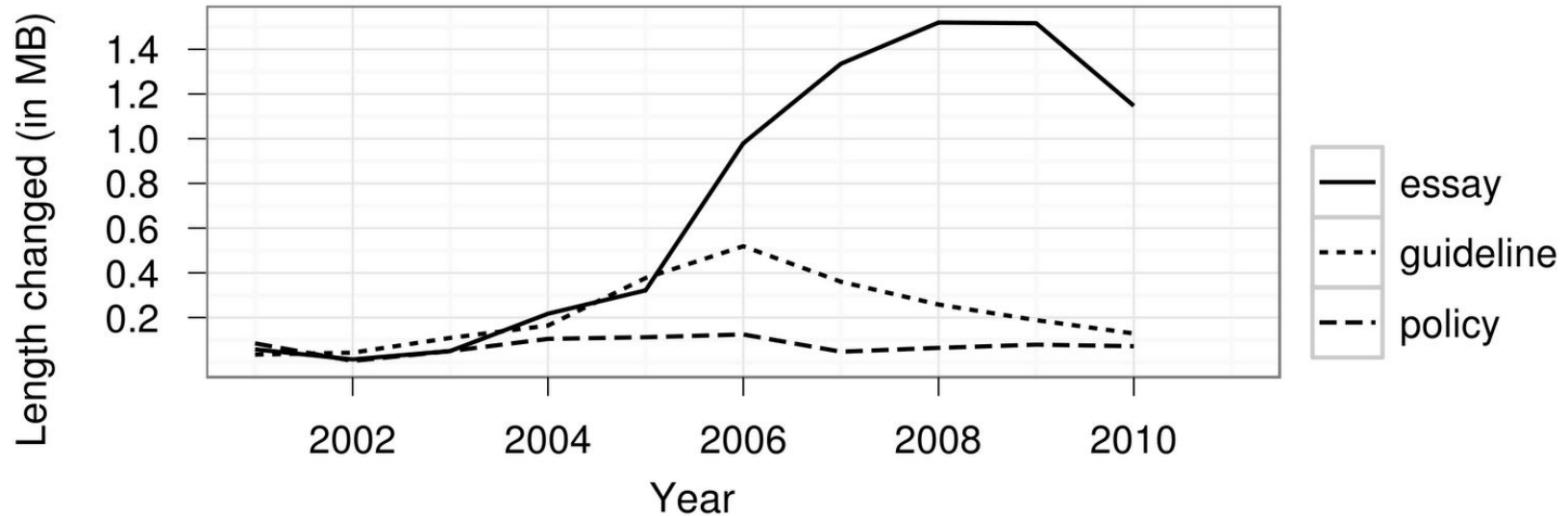
From Wikipedia, the free encyclopedia

*To discuss particular sources, see the [reliable sources](#) / see [WP:VAND](#). For the default Wikipedia skin, see [WP:](#)*



This page documents an English Wikipedia [policy](#), a widely accepted standard that all editors should [normally](#) follow. Changes made to it should reflect [consensus](#).

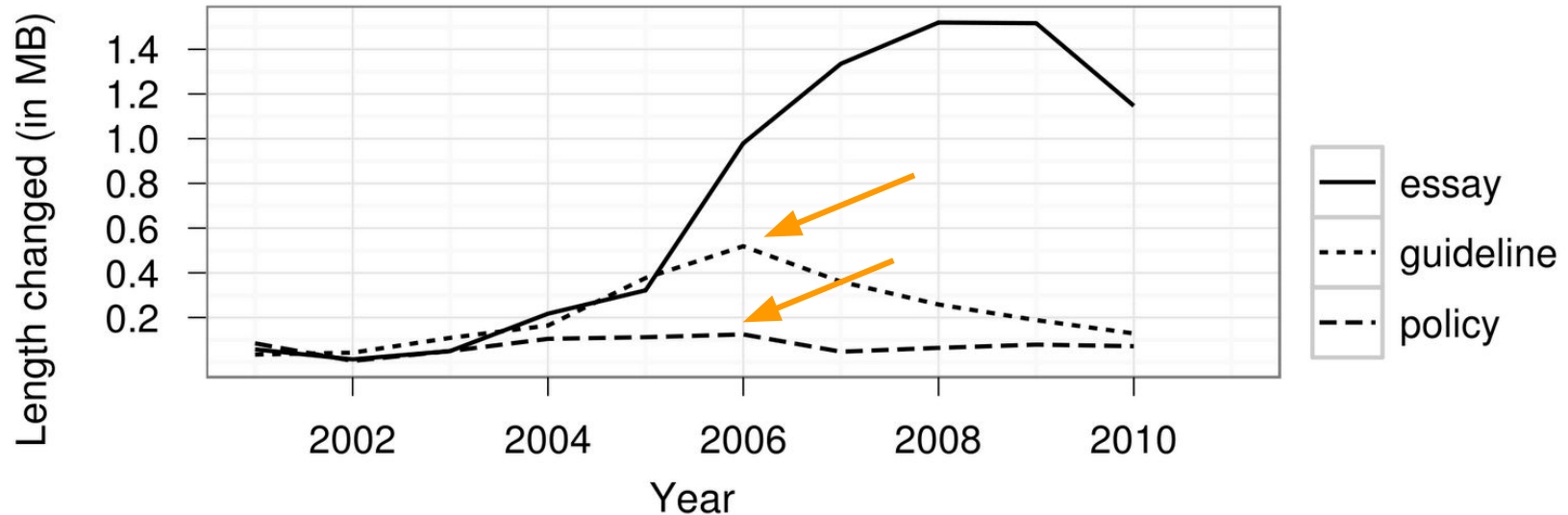
# Growth of regulations



Halfaker, A., Geiger, R. S., Morgan, J. T., & Riedl, J. (2012). The rise and decline of an open collaboration system: How Wikipedia's reaction to popularity is causing its decline. *American Behavioral Scientist*, 0002764212469365.

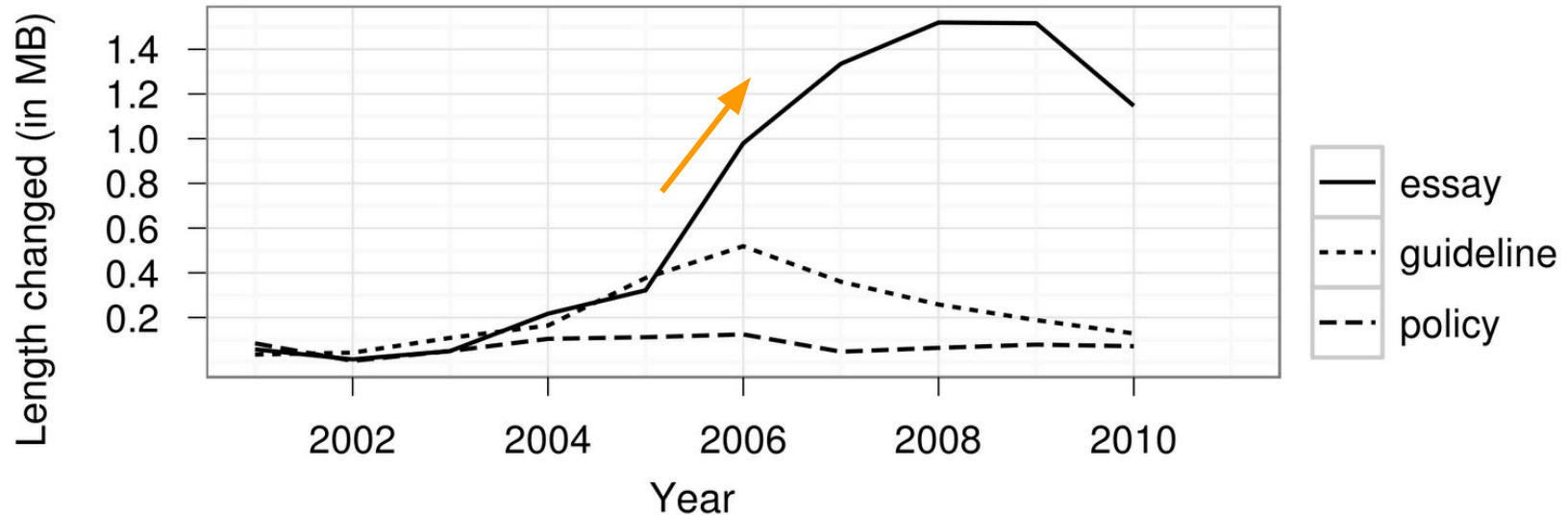


# Growth of regulations



Halfaker, A., Geiger, R. S., Morgan, J. T., & Riedl, J. (2012). The rise and decline of an open collaboration system: How Wikipedia's reaction to popularity is causing its decline. *American Behavioral Scientist*, 0002764212469365.

# Growth of regulations



Halfaker, A., Geiger, R. S., Morgan, J. T., & Riedl, J. (2012). The rise and decline of an open collaboration system: How Wikipedia's reaction to popularity is causing its decline. *American Behavioral Scientist*, 0002764212469365.

## Work allocation

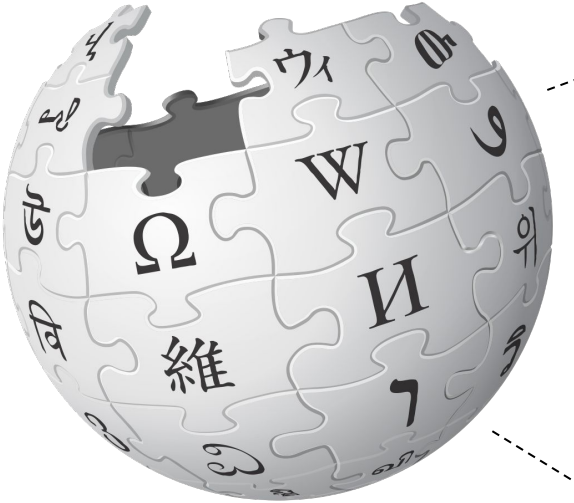
- Identify, prioritize and assign tasks

## Regulation of behavior

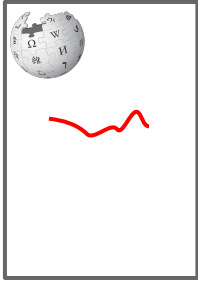
- Norm formation, propagation and enforcement

## Quality control

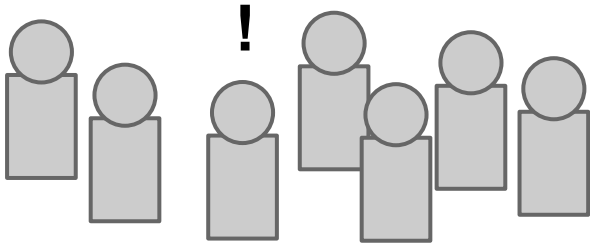
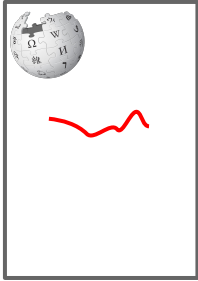
- Identify and remove damage



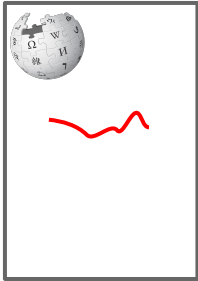
# Quality control



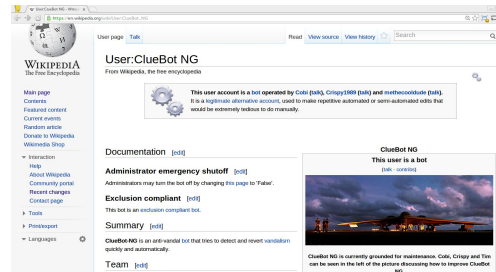
# Quality control



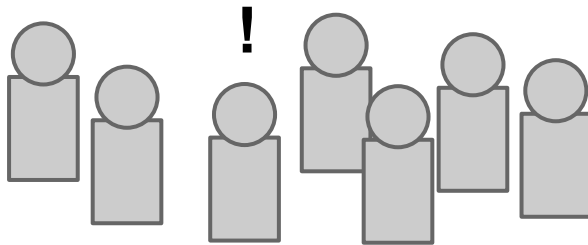
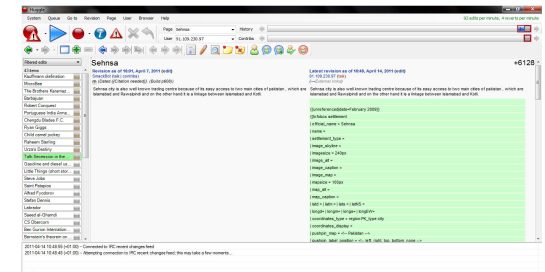
# Quality control



## Fully automated



## Semi automated



## Machine learning

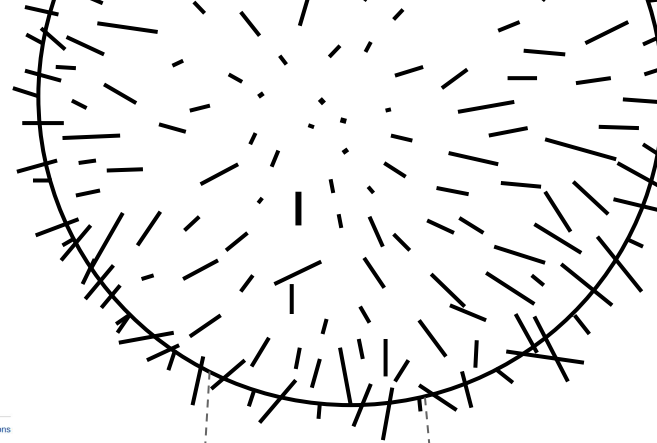
- Fast (~ 5 seconds)[1]
- No human effort
- *Only obvious vandalism*

## Human computation

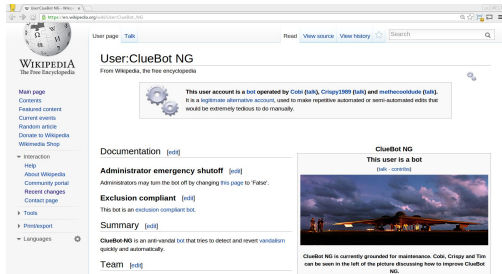
- Still pretty fast (~ 30 seconds)[1]
- Minimizes human effort
- Humans catch most vandalism at a glance



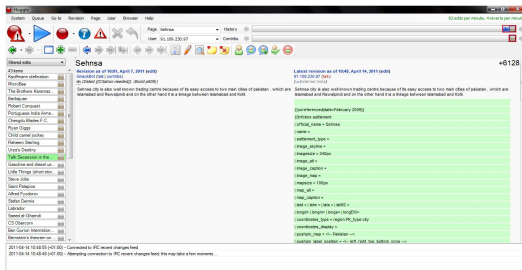
# Quality control



## Fully automated



## Semi automated



## Banning (Admins)

### Wikipedia:Administrator intervention against vandalism

From Wikipedia, the free encyclopedia [Administrator instructions](#)  
(Redirected from Wikipedia:AV)

*"WP:RVAN" redirects here. For information on how to respond to vandalism, see [Wikipedia:Vandalism](#) & [How to respond to vandalism](#).*

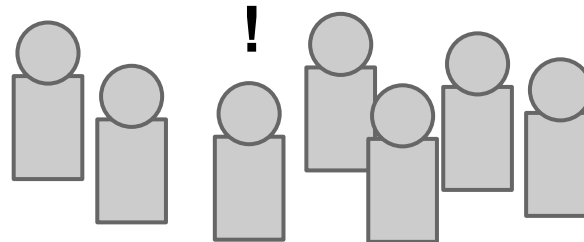
	<b>Noticeboards, etc.</b> <span style="float: right;">[hide]</span>
	Wikipedia's centralized discussion, request, and help venues. See the dashboard for an expanded listing.
<b>General</b>	Administrators' noticeboard (main · incidents) · Bot owners · Closure · Education (main · incidents) · Importing pages · Main Page errors · Open proxies · OTRS · Oversight · Page protection

### Innate

- Fast
- General
- Local

### Adaptive

- Slow
- Specific
- Global



Halfaker, A. & Riedl, J. (2012) Bots and Cyborgs, *IEEE Computing* 45(3) (p. 79-82)

Geiger, R. S., & Ribes, D. (2010, February). The work of sustaining order in wikipedia: the banning of a vandal. *CSCW* (pp. 117-126). ACM.



## Work allocation

- Identify, prioritize and assign tasks

## Regulation of behavior

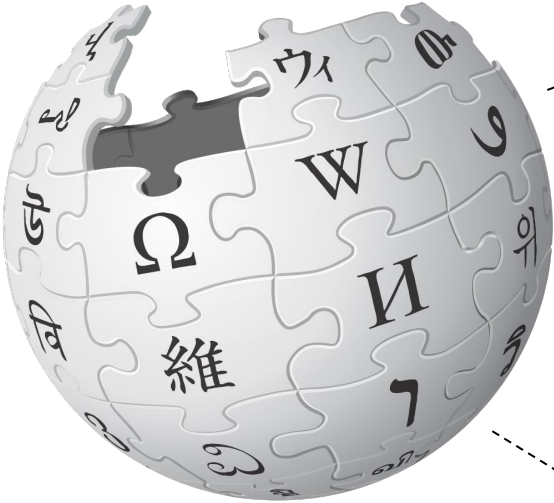
- Norm formation, propagation and enforcement

## Quality control

- Identify and remove damage

## Community management

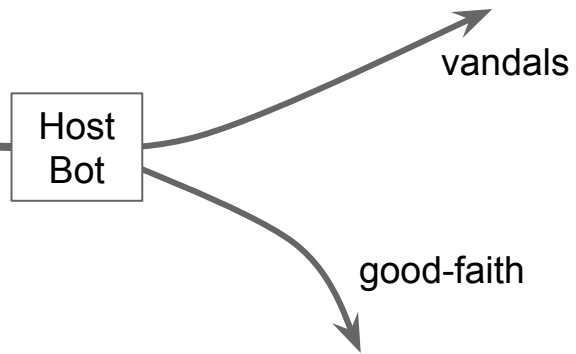
- Newcomer socialization, dispute mediation & training



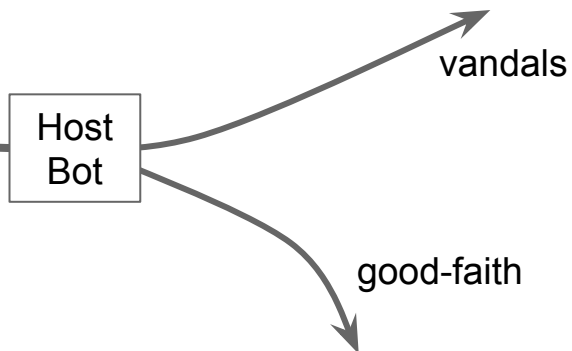


[https://commons.wikimedia.org/wiki/File:Flickr - Official U.S. Navy Imagery - Sailor%27s daughter operates a fire hose with crew member assistance.jpg](https://commons.wikimedia.org/wiki/File:Flickr_-_Official_U.S._Navy_Imagery_-_Sailor%27s_daughter_operates_a_fire_hose_with_crew_member_assistance.jpg)

6,000 newcomers per day



6,000 newcomers per day



6,000 newcomers per day



## Work allocation

- Identify, prioritize and assign tasks

## Regulation of behavior

- Form, propagate and enforce norms

## Quality control

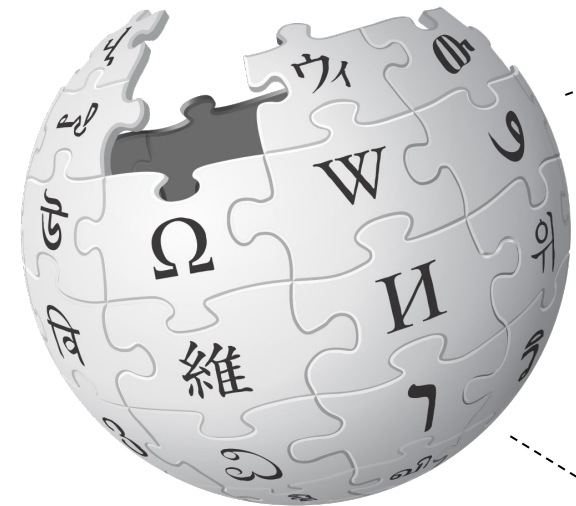
- Identify and remove damage

## Community management

- Socialize & train newcomers; mediate disputes

## Reflection (Adaptation)

- Where are we going? Where do we want to go? How do we want to get there?

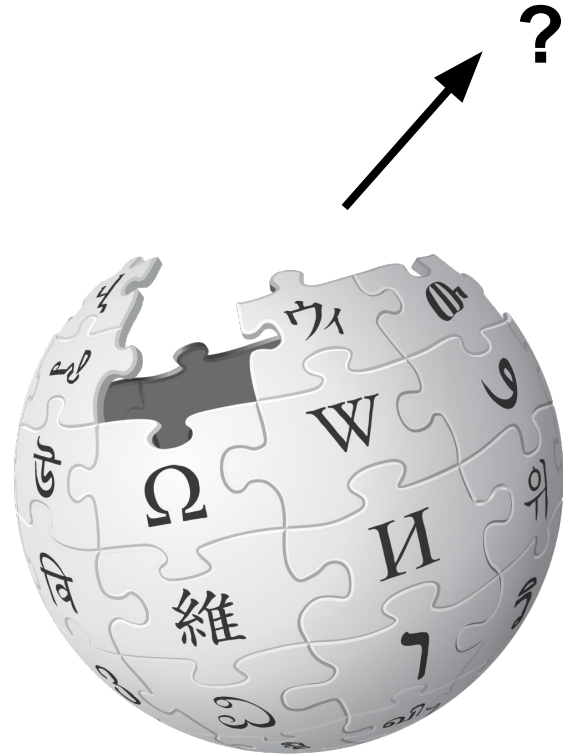


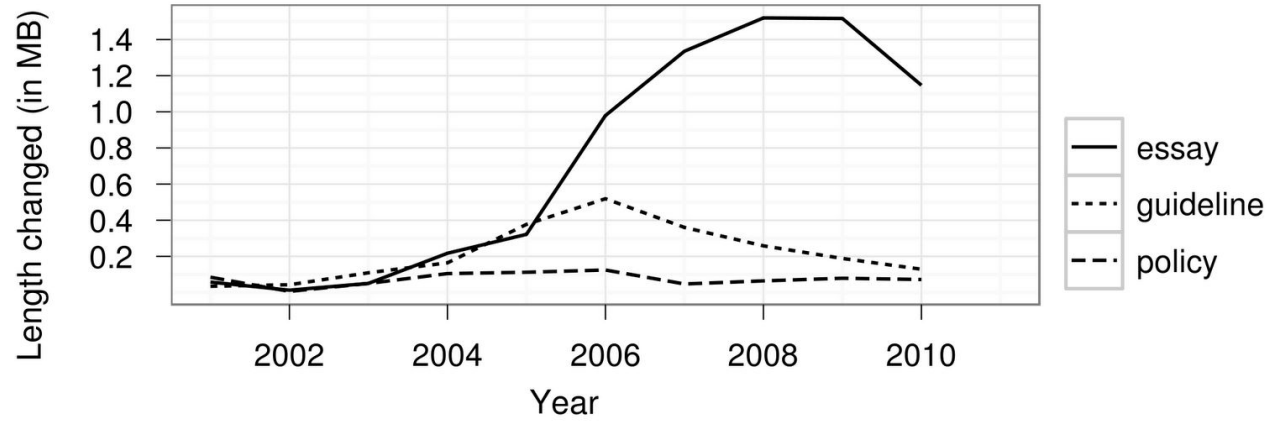
# Reflection (Adaptation)

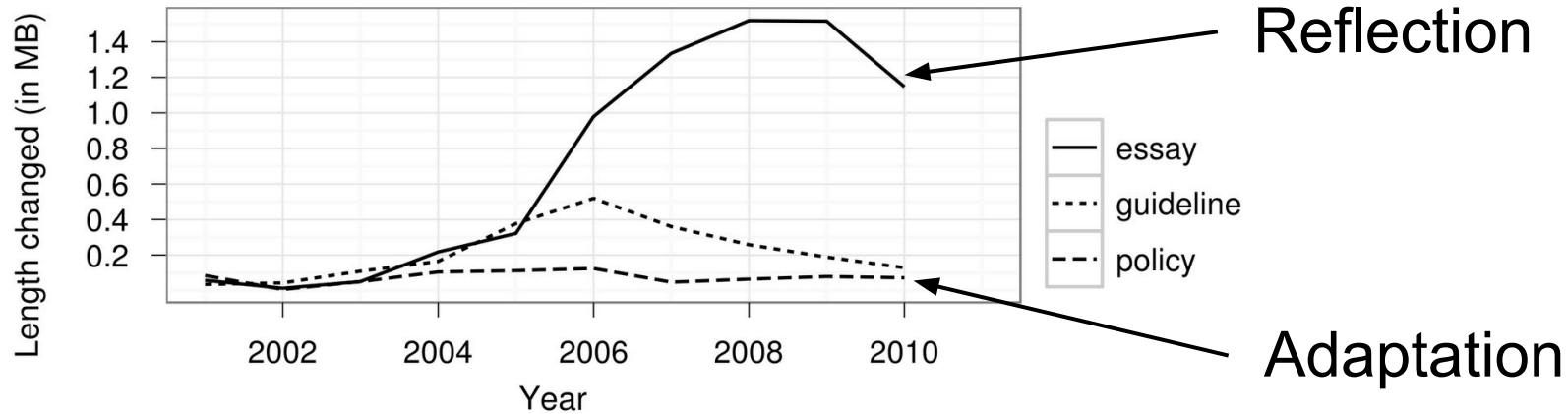
Where *are* we going?

Where do we *want* to go?

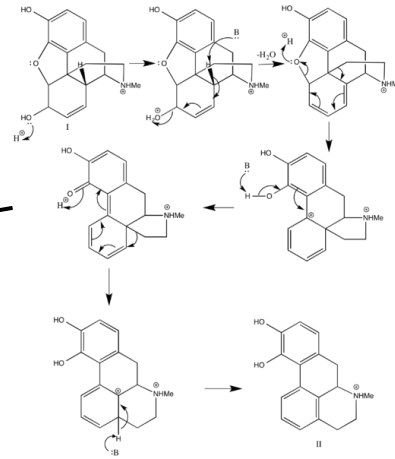
*How* do we get there?



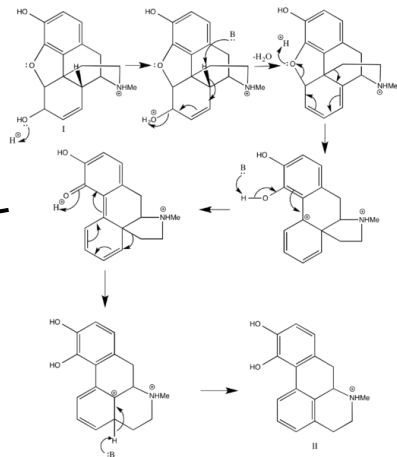




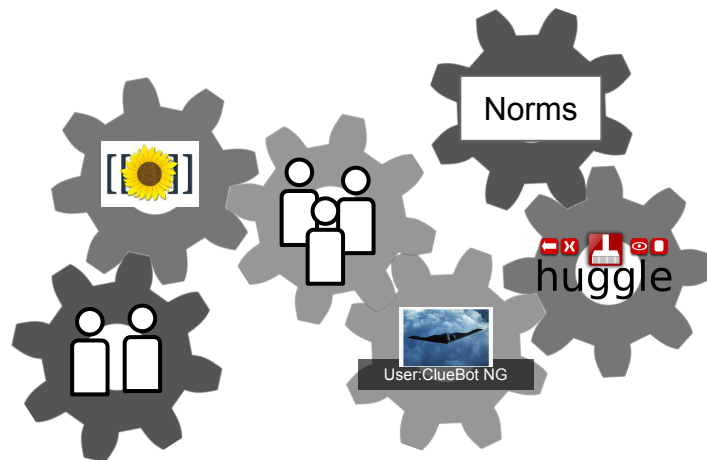




[https://commons.wikimedia.org/wiki/File:Morphine\\_to\\_Apomorphine.png](https://commons.wikimedia.org/wiki/File:Morphine_to_Apomorphine.png) CC-SY-SA 4.0

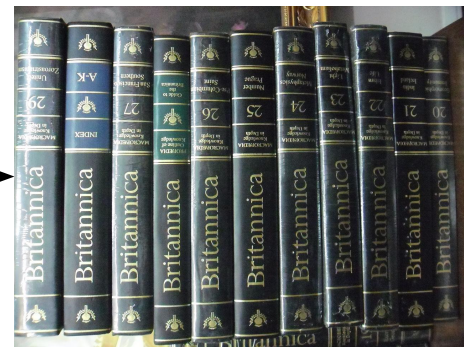
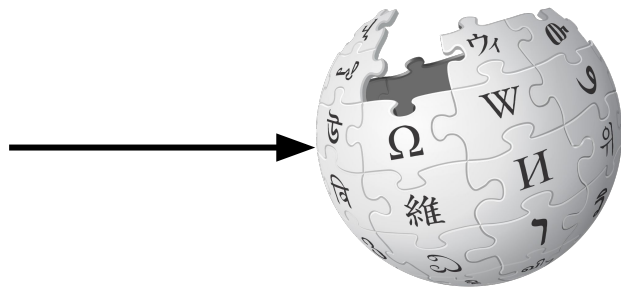


[https://commons.wikimedia.org/wiki/File:Morphine\\_to\\_Apomorphine.png](https://commons.wikimedia.org/wiki/File:Morphine_to_Apomorphine.png) CC-SY-SA 4.0

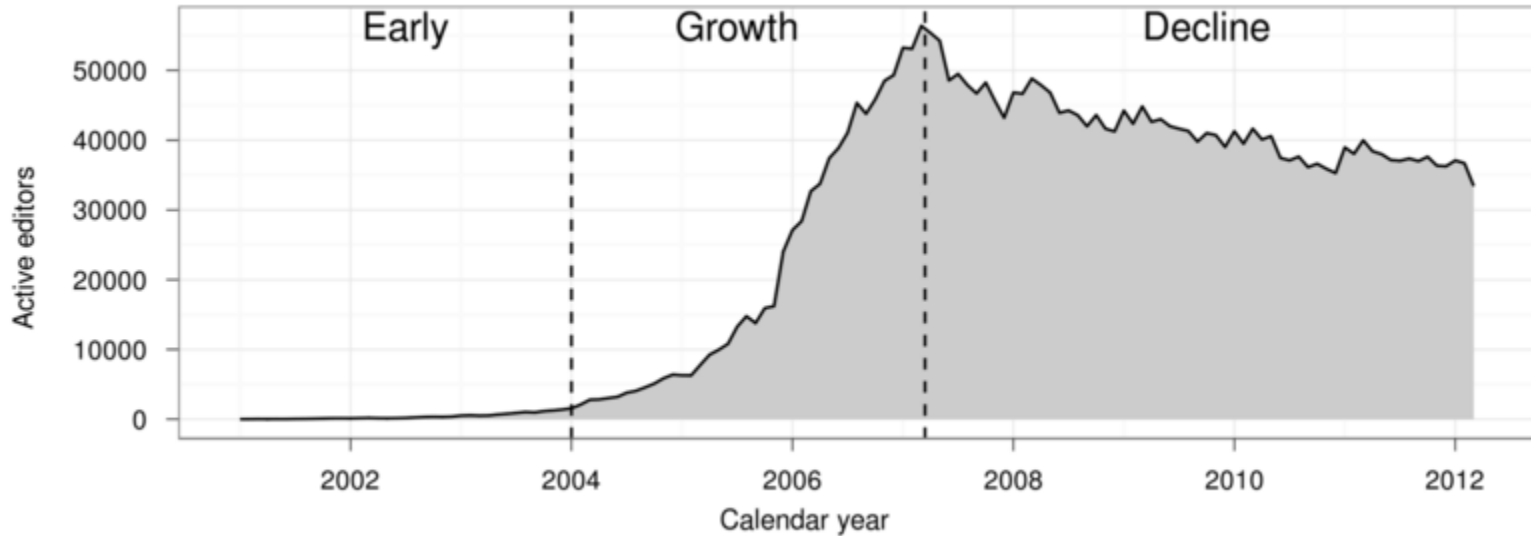


[https://commons.wikimedia.org/wiki/File:Gear\\_reducer.gif](https://commons.wikimedia.org/wiki/File:Gear_reducer.gif) CC-BY-SA 3.0

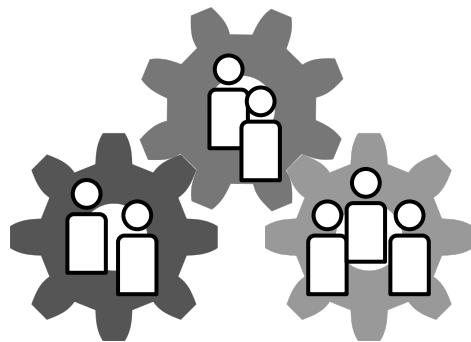
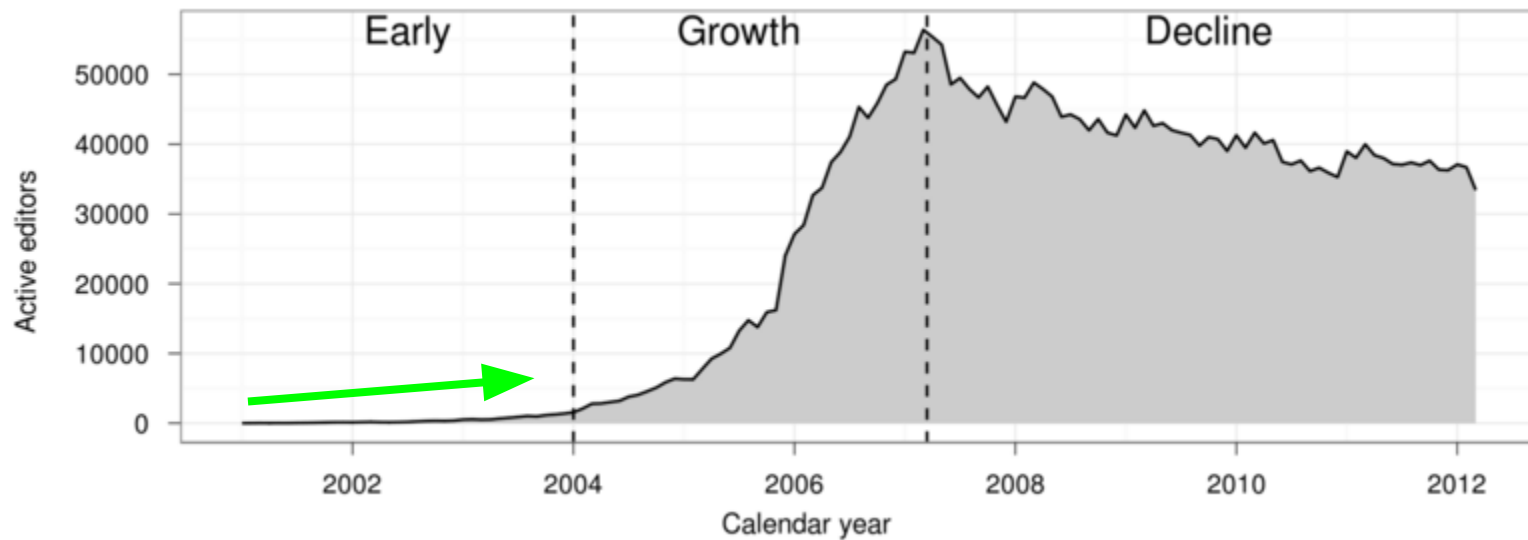
Available  
Human  
Attention

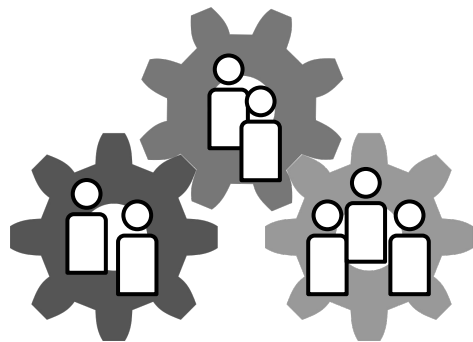
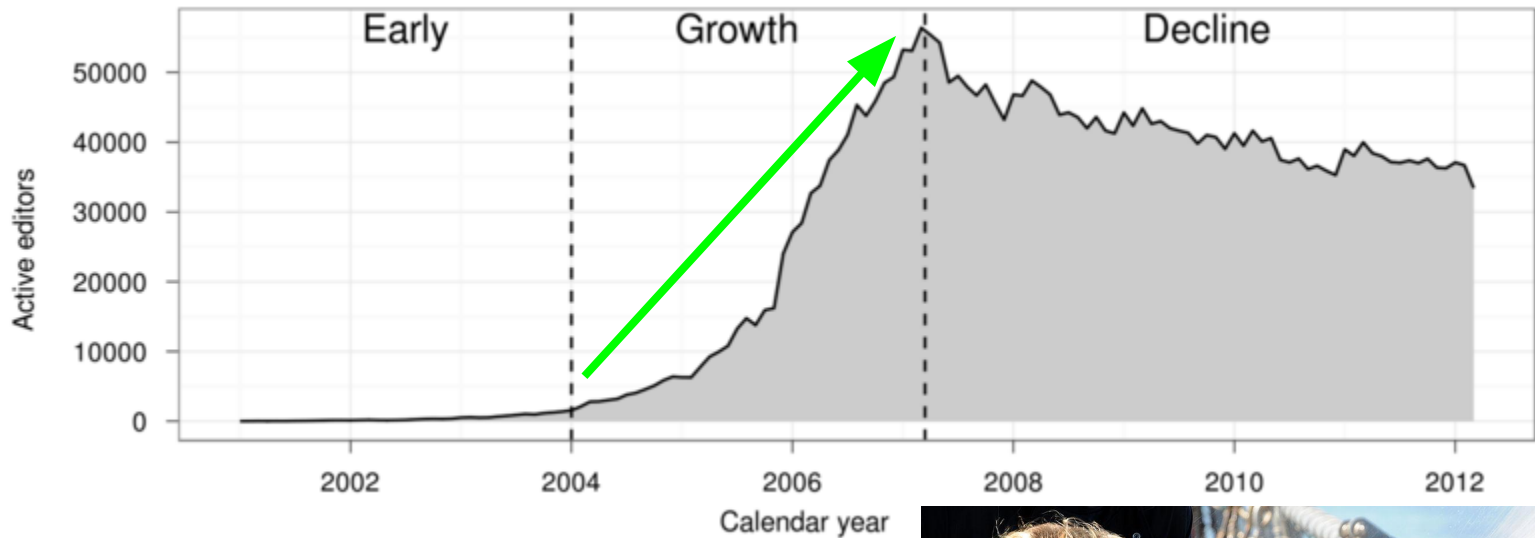


# **Part 2. Critique of algorithmic quality control**

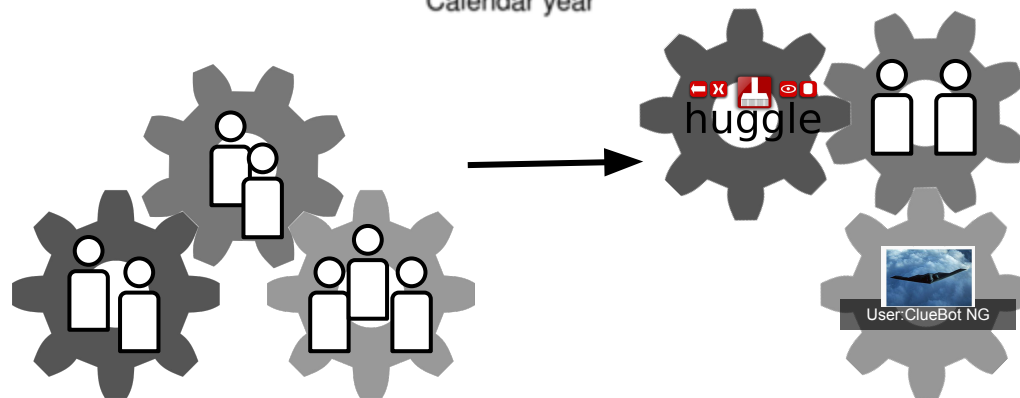
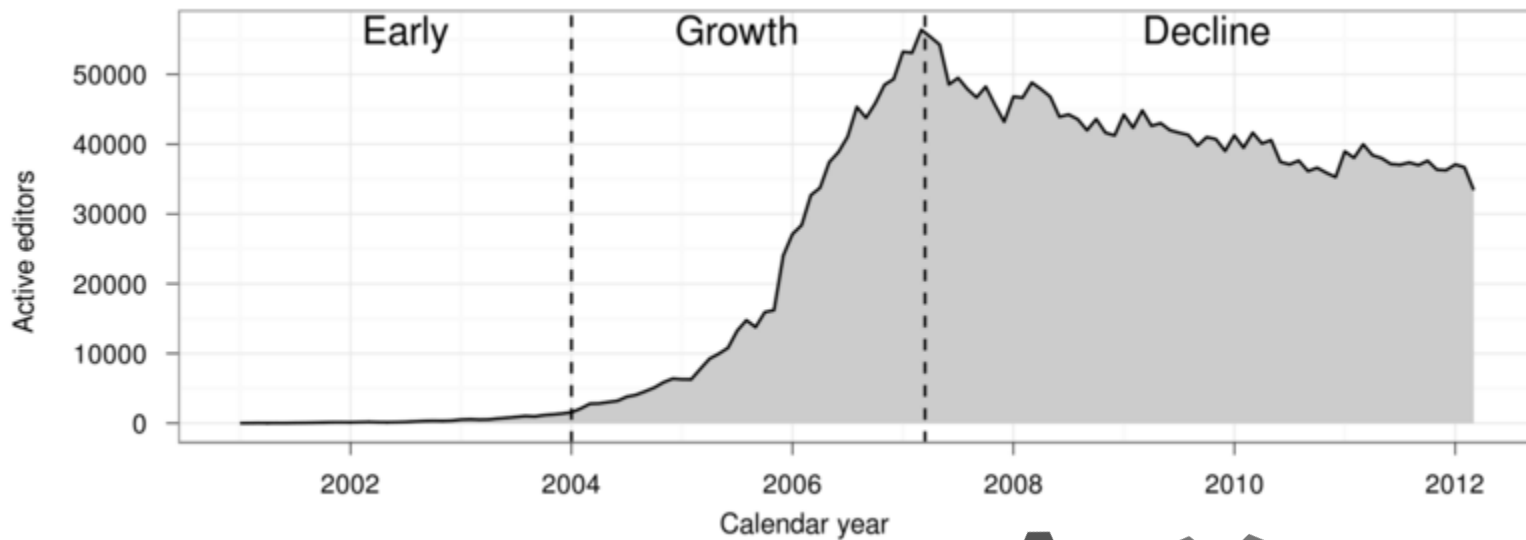


- [:m:Research:The Rise and Decline](#)
- Halfaker, A., Geiger, R. S., Morgan, J. T., & Riedl, J. (2012). The rise and decline of an open collaboration system: How Wikipedia's reaction to popularity is causing its decline. *American Behavioral Scientist*, 0002764212469365.





[https://commons.wikimedia.org/wiki/File:Flickr - Official U.S. Navy Imagery - Sailor%27s\\_daughter\\_operates\\_a\\_fire\\_hose\\_with\\_crew\\_member\\_assistance.jpg](https://commons.wikimedia.org/wiki/File:Flickr_-_Official_U.S._Navy_Imagery_-_Sailor%27s_daughter_operates_a_fire_hose_with_crew_member_assistance.jpg)





# The machine classifier



# The machine classifier

is\_anon  
chrs\_added  
chrs\_removed  
cust\_comment  
repeated\_chrs  
longest\_token  
badwords\_added

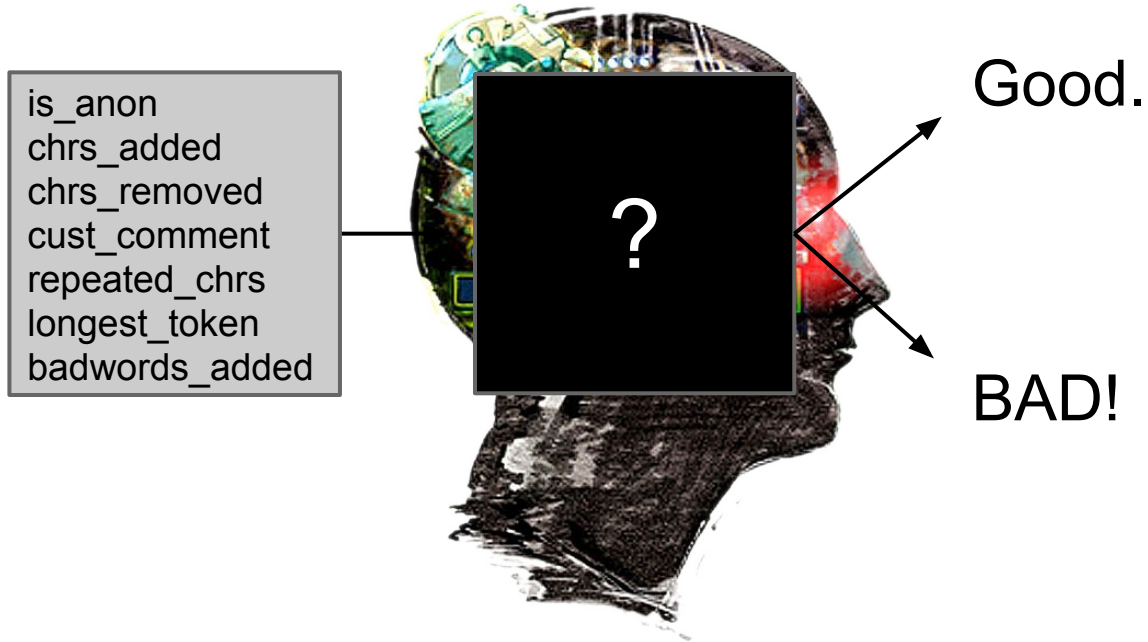


# The machine classifier

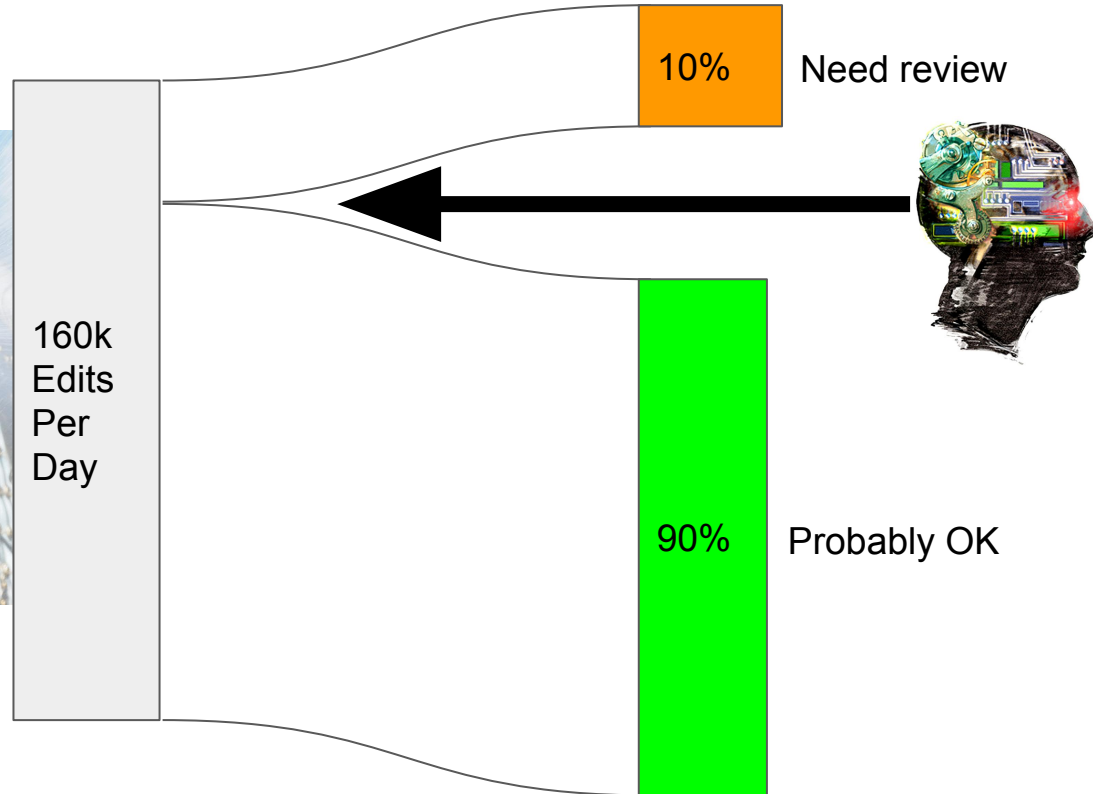
is\_anon  
chrs\_added  
chrs\_removed  
cust\_comment  
repeated\_chrs  
longest\_token  
badwords\_added



# The machine classifier



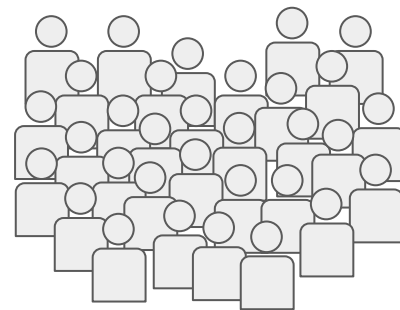
# Counter vandalism



**Without machine prediction:** Reviewing 160k edits per day...

267 Hours

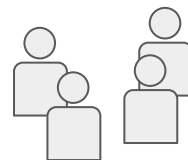
(33 people \* 8 hours)

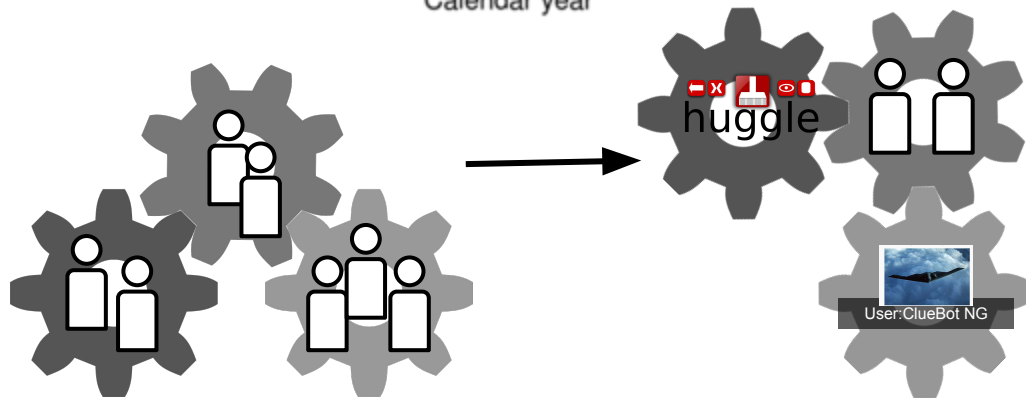
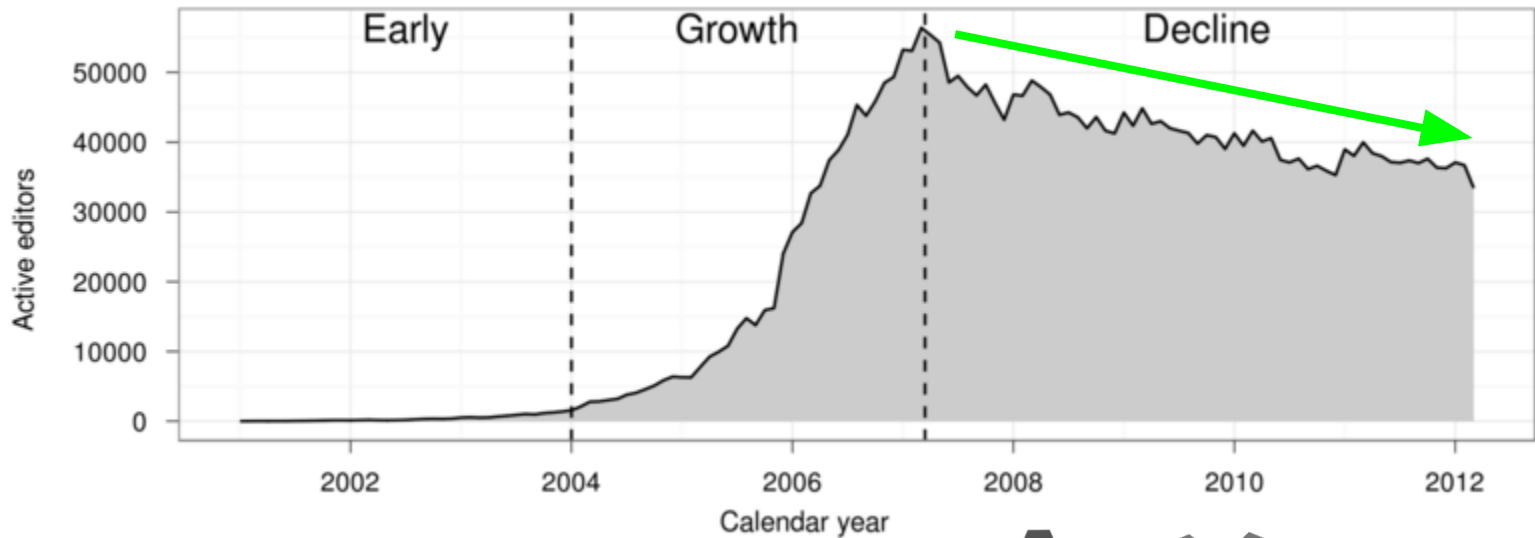


**With machine prediction:** Reviewing 16k edits per day...

27 Hours

(4 people \* 8 hours)





**What happened?**



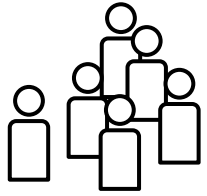
# **Standpoints & objectivity**

# Standpoints & objectivity

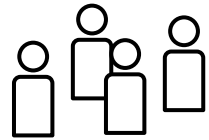


Donna Haraway

# Standpoints & objectivity



Male scientists



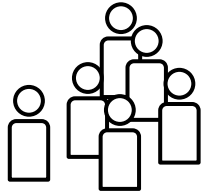
Female\* scientists



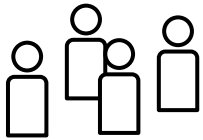
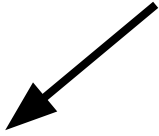
[Via commons](#) CC-BY-SA 3.0

Donna Haraway

# Standpoints & objectivity



Male scientists



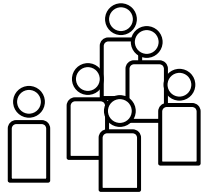
Female\* scientists



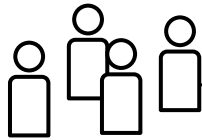
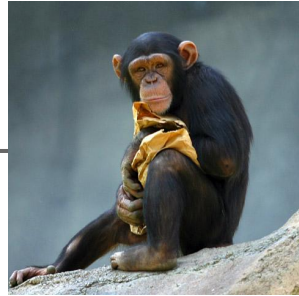
[Via commons](#) CC-BY-SA 3.0

Donna Haraway

# Standpoints & objectivity



Male scientists



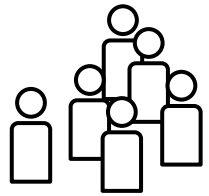
Female\* scientists



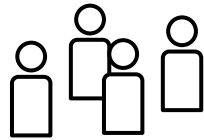
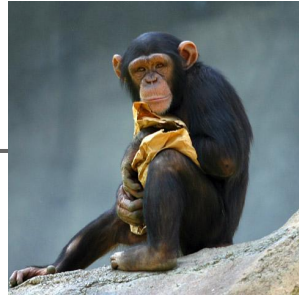
[Via commons](#) CC-BY-SA 3.0

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# Standpoints & objectivity



Male scientists

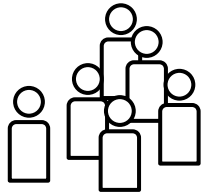


Female\* scientists

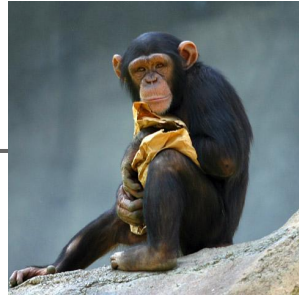


Donna Haraway

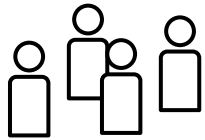
# Standpoints & objectivity



Male scientists



- reproductive competition
- dominance



Female\* scientists



- communication
- social grooming



[Via commons](#) CC-BY-SA 3.0

Donna Haraway

# Standpoints & objectivity

Your **standpoint** gives you a view of what's important & valuable. (comm vs. dominance)



# Standpoints & objectivity

Your **standpoint** gives you a view of what's important & valuable. (comm vs. dominance)

An **objectivity** is what you construct to reify this value. (grooming patterns vs. sex partners)

# Standpoints & objectivity

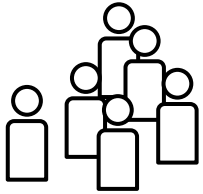
Your **standpoint** gives you a view of what's important & valuable. (comm vs. dominance)

An **objectivity** is what you construct to reify this value. (grooming patterns vs. sex partners)

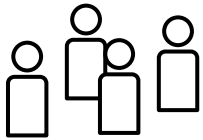
Standpoints and objectivities can be merged and extended.

# Standpoints & objectivity

Expanded standpoints



Male scientists



Female\* scientists

Multiple objectivities



Expanded understanding

- reproductive competition
- dominance
  
- communication
- social grooming

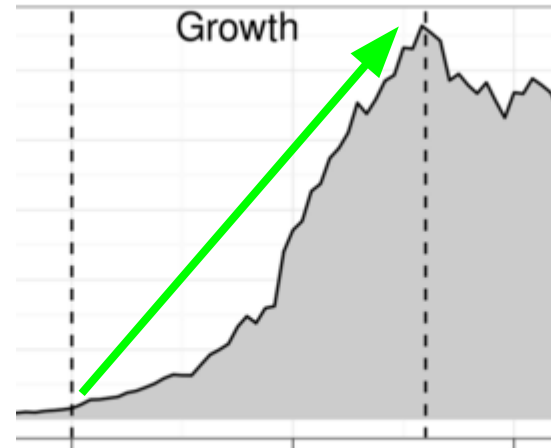


Via commons CC-BY-SA 3.0

Donna Haraway

# Standpoint

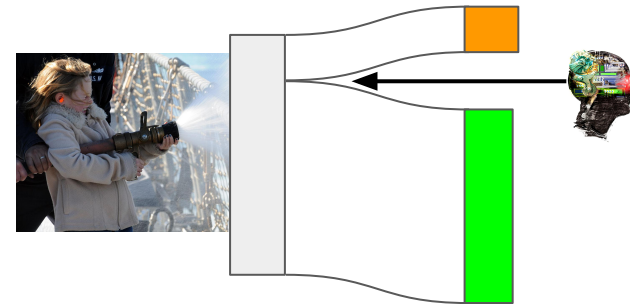
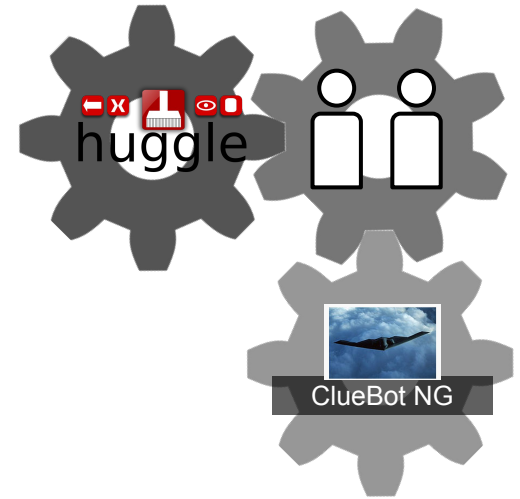
- Wikipedia is a firehose
- Bad edits must be reverted
- Minimize effort wasted on quality control work



# Standpoint

- Wikipedia is a firehose
- Bad edits must be reverted
- Minimize effort wasted on quality control work

# Objectivity

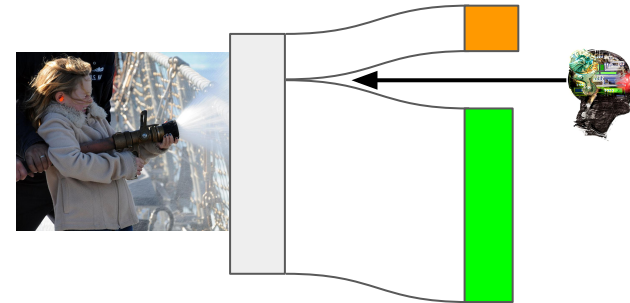
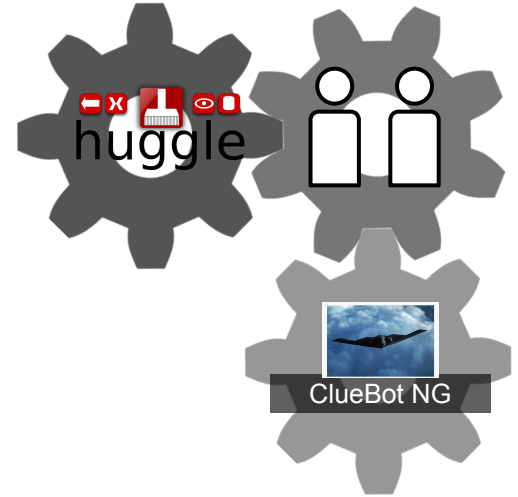


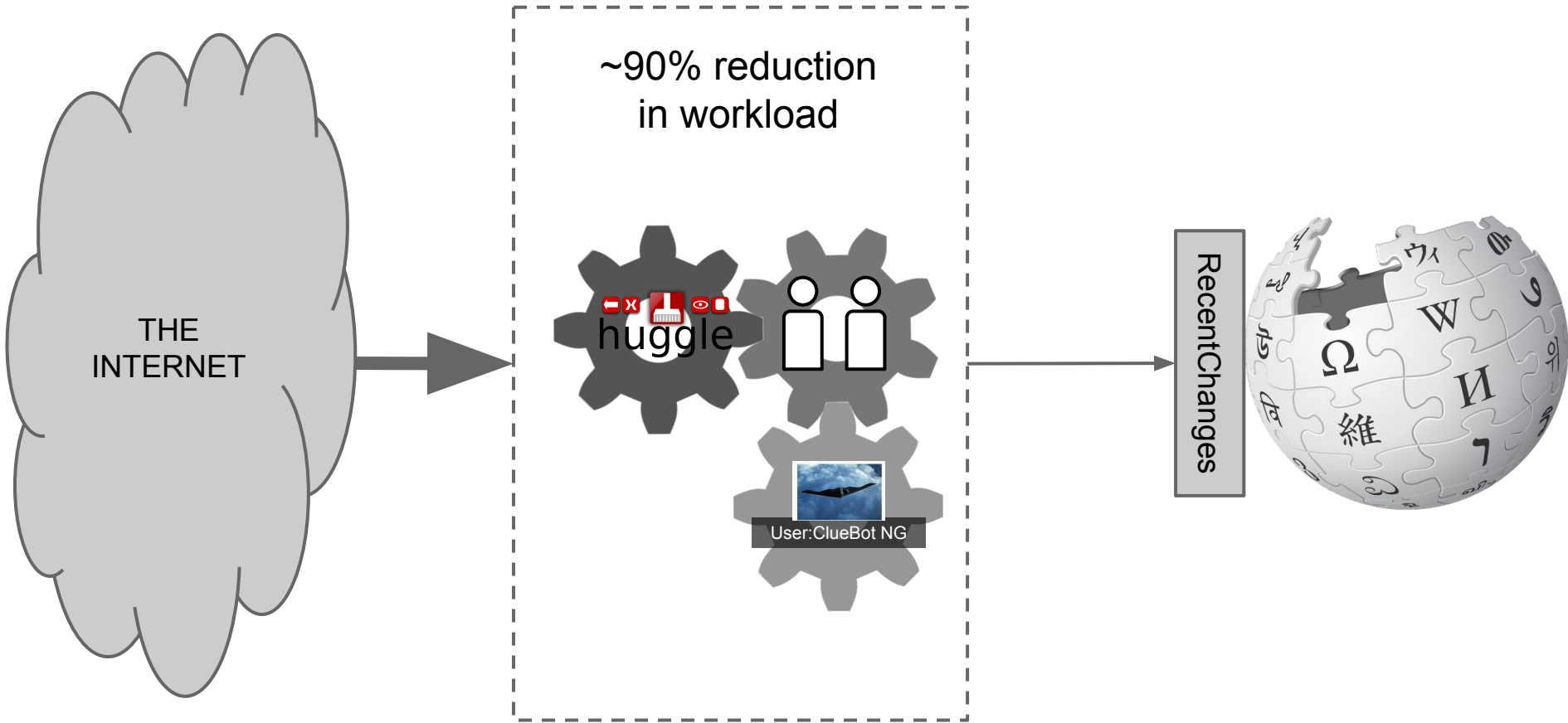
# Standpoint

- Wikipedia is a firehose
- Bad edits must be reverted
- Minimize effort wasted on quality control work

**MASSIVE SUCCESS!**

# Objectivity

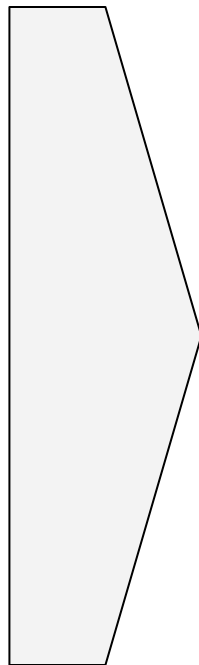
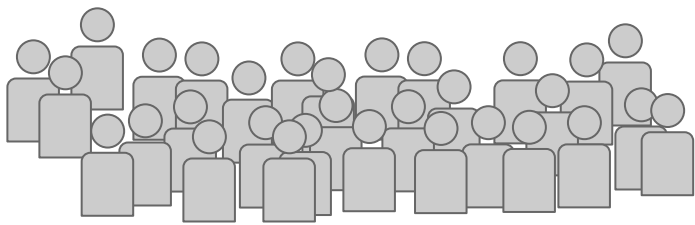




# 267 hours

Reviewing all of the edits

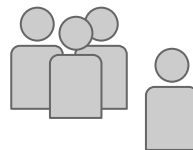
That's 33 people working  
8 hours each.



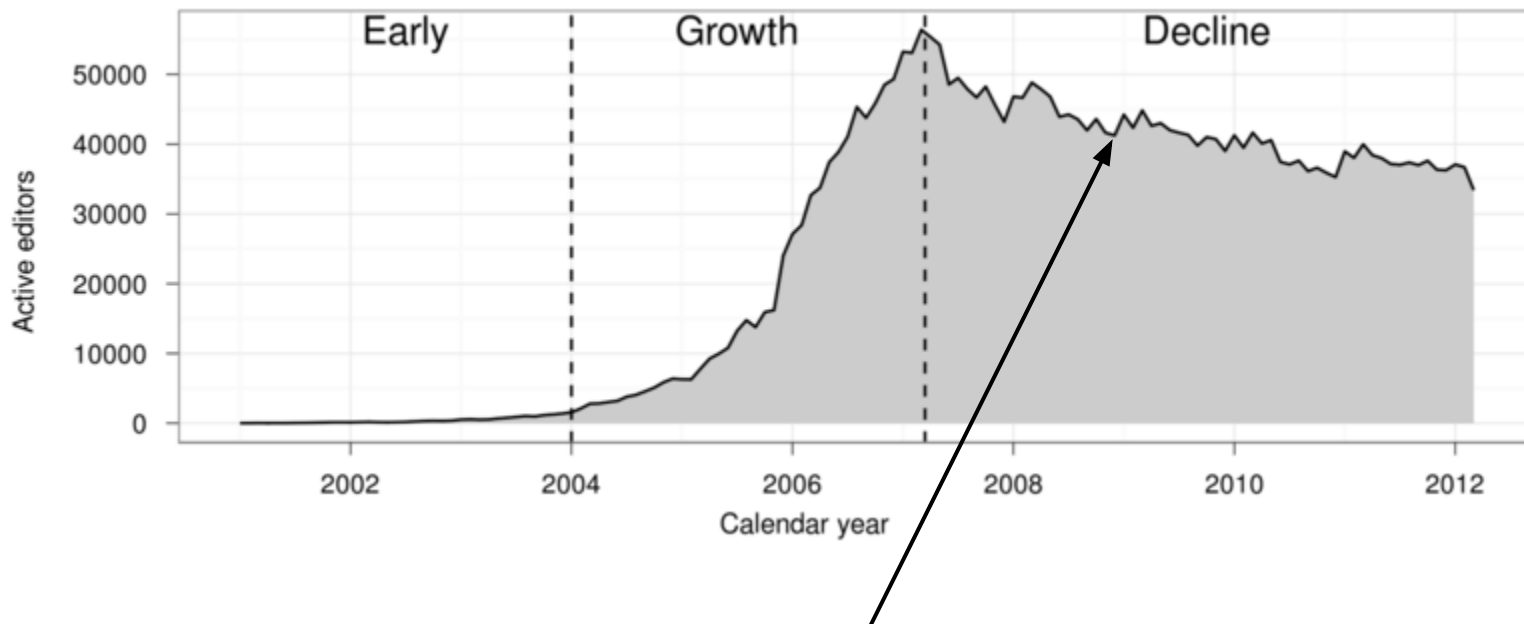
# 27 hours

Reviewing edits **WITH  
MACHINE LEARNING.**

That's 4 people working  
7 hours each.

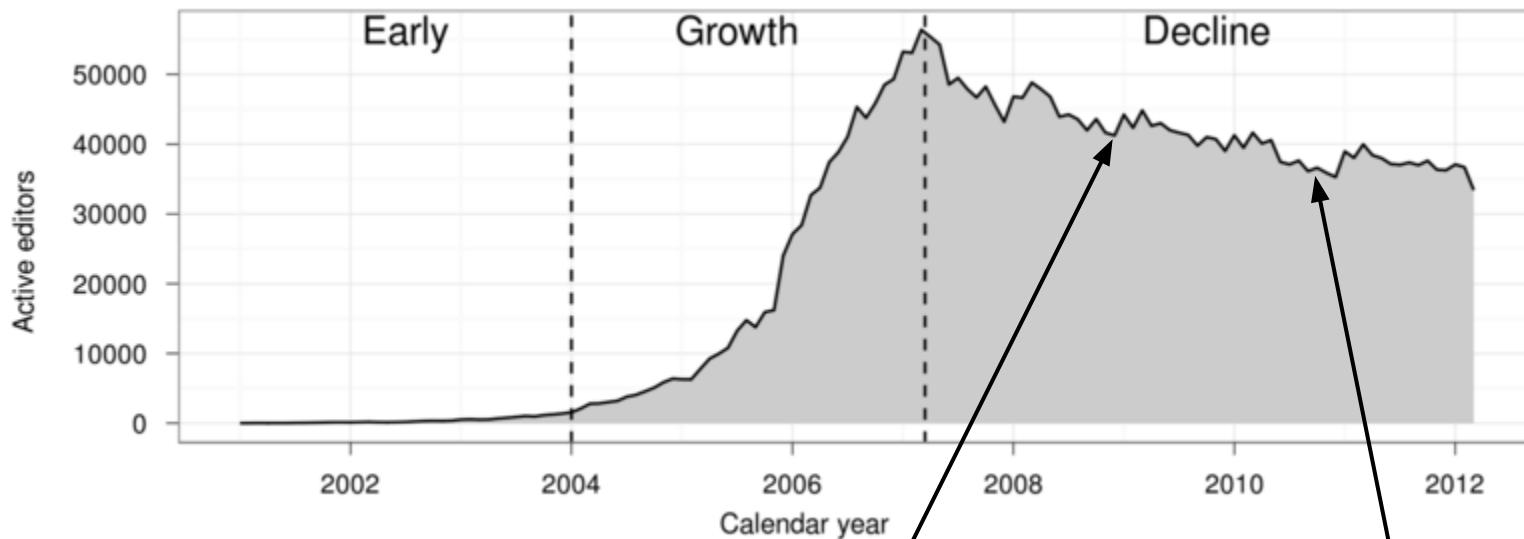






Woah woah woah! All the newcomers are leaving!

Suh, B., et al. (2009). The singularity is not near: slowing growth of Wikipedia. WikiSym. ACM.

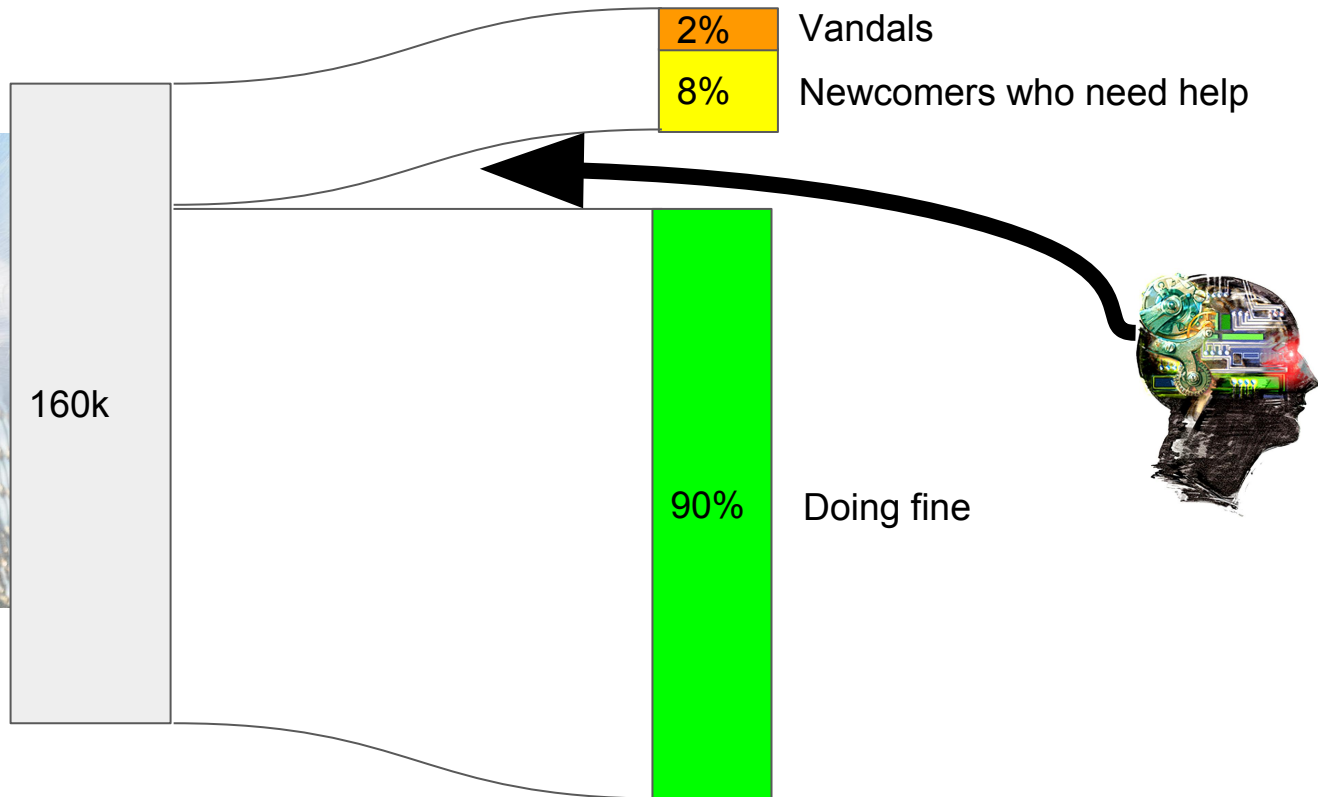


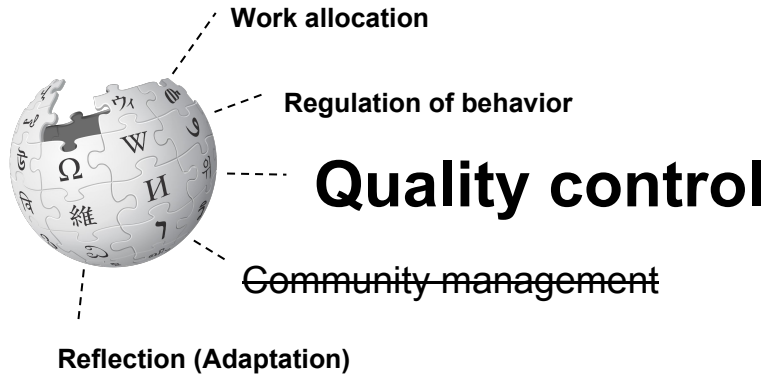
Woah woah woah! All the newcomers are leaving!

Suh, B., et al. (2009). The singularity is not near: slowing growth of Wikipedia. WikiSym. ACM.

We forgot to design for socializing newcomers!

Halfaker, A. et al. (2012) The Rise and Decline of an Open Collaboration System. American Behavioral Scientist.







Hey! Maybe we should also value newcomers having a good experience -- and design for that.

- Wikipedia is a firehose
- Bad edits must be reverted
- Minimize effort wasted on quality control work

- Wikipedia is a firehose ✓
- Bad edits must be reverted
- Minimize effort wasted on quality control work

- Wikipedia is a firehose ✓
- Bad edits must be reverted ✓
- Minimize effort wasted on quality control work



- Wikipedia is a firehose ✓
- Bad edits must be reverted ✓
- Minimize effort wasted on quality control work ✓

- Wikipedia is a firehose ✓
- Bad edits must be reverted ✓
- Minimize effort wasted on quality control work ✓
- **Socialize & train the newcomers!**

# 2012 - 2015 : The conversation incorporates new standpoint

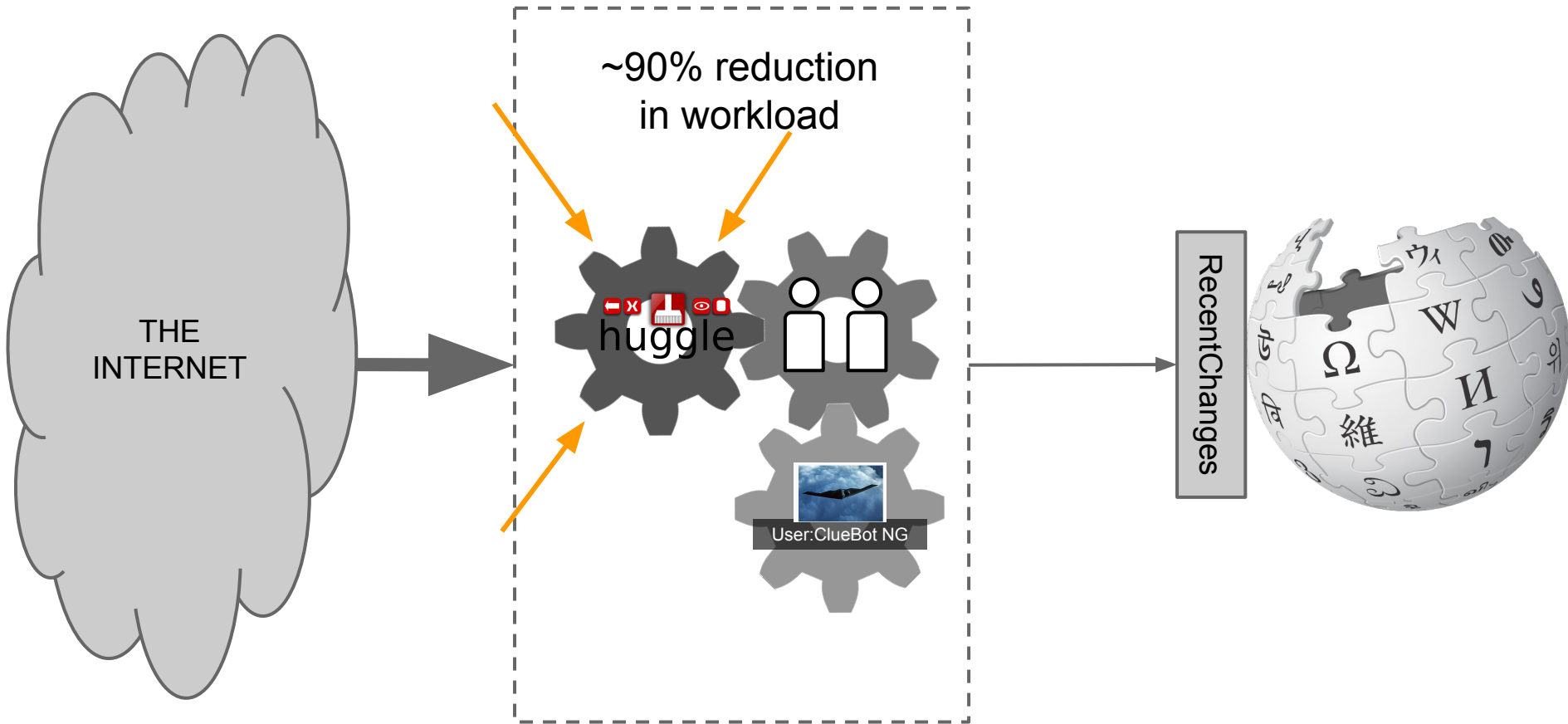
- More newcomers -- major Wikimedia Foundation goal
- New spaces developed for supporting newcomers



The Coop



**Win?**





huggle



First, the sugar



Huggle is an amazing piece of software. I have no doubt it represents the state of the art in distributed quality control. This software and its users are responsible for critical work. It's developers and users are wonderful people. We owe them a lot for their thankless work, so let me take this opportunity to say:

Thank You





Now for the medicine

# Huggle circa 2009

The screenshot shows the Huggle web browser interface. At the top, there is a menu bar with 'System', 'Queue', 'Go to', 'Revision', 'Page', 'User', 'Browser', and 'Help'. Below the menu bar is a toolbar with various icons for navigation and editing. The main content area displays the page for 'Laura Bush'. On the left side, there is a 'Filtered edits' sidebar with a list of 50 items, including 'Bratwurst', 'Best Day Ever', 'Motörhead', 'Paul Frees', 'Tom O'Horgan', 'MAST Academy', 'Final Fantasy Crystal ...', 'Timeline of World War ...', 'Associated TeleVision', 'Raith Rovers F.C. sea...', 'Bristol VR', 'Paper Planes', 'Connected component ...', 'Jonny Wilkinson', 'My Love (The-Dream ...', 'Kalhori', 'Nate Newton (musicia...', 'DaVita', 'Raúl Ramírez', 'START II', 'Planet of the Dead', 'UKTV', 'Princeton Day School', and 'George Washington G...'. The main content area shows the article for 'Laura Bush' with two versions of the text. The left version is the 'Revision as of 11:56, April 11, 2009' and the right version is the 'Current revision as of 11:56, April 11, 2009'. The current revision text is highlighted in green and contains a redaction: 'She smells like bad body odor.' The left version text is highlighted in yellow and contains the same sentence. The bottom status bar shows the page title 'Laura Bush' and the user '74.143.33.2'.

Huggle

System Queue Go to Revision Page User Browser Help

Page Laura Bush History

User 74.143.33.2 Contribs

138 edits per minute, 9 rever

Filtered edits

50 items

Bratwurst 2

Best Day Ever

Motörhead

Paul Frees

Tom O'Horgan

MAST Academy

Final Fantasy Crystal ...

Timeline of World War ...

Associated TeleVision

Raith Rovers F.C. sea...

Bristol VR

Paper Planes

Connected component ...

Jonny Wilkinson

My Love (The-Dream ...

Kalhori

Nate Newton (musicia...

DaVita

Raúl Ramírez

START II

Planet of the Dead

UKTV

Princeton Day School

George Washington G...

## Laura Bush

Revision as of 11:56, April 11, 2009 (edit)  
74.143.33.2 (talk)

| signature = Laura Bush signature.svg  
}}

""Laura Lane Welch Bush"" (born November 4, 1946) is the wife of the [[List of Presidents of the United States|forty-third]] [[President of the United States]], [[George W. Bush]], and was the [[First Lady of the United States]] from January 20th, 2001 to January 20th, 2009. **She smells like bad body odor.**

Mrs. Bush has had a love for books and reading since childhood, and her life and education have reflected that interest. She graduated from [[Southern Methodist University]] in 1968 with a [[Bachelor's degree]] in [[education]], and soon took a job as a second grade [[school teacher]]. After attaining her [[Master's degree]] in [[Library Science]] at the [[University of Texas at Austin]], she was employed as a [[librarian]]. She met George Walker Bush in 1977, and they were married later that year; in 1981, the couple had twin daughters.

Current revision as of 11:56, April 11, 2009 (edit)  
Until It Sleeps (talk | contribs)  
**m** (Reverted edits by 74.143.33.2 to last revision by 128.12.32.117 (HG))

| signature = Laura Bush signature.svg  
}}

""Laura Lane Welch Bush"" (born November 4, 1946) is the wife of the [[List of Presidents of the United States|forty-third]] [[President of the United States]], [[George W. Bush]], and was the [[First Lady of the United States]] from January 20th, 2001 to January 20th, 2009.

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2009-04-11 13:56:29 PM (-0500) Edited "User talk:74.143.33.2" Level 2 warning on Laura Bush (US)

# Huggle circa 2009

Good



Bad



The screenshot shows the Huggle web interface. At the top, there is a navigation bar with 'System', 'Queue', 'Go to', 'Revision', 'Page', 'User', 'Browser', and 'Help'. Below this is a toolbar with various icons for navigation and editing. A 'Bad' annotation with a rightward arrow points to the toolbar area. The main content area displays the page for 'Laura Bush', showing the current revision as of 11:56, April 11, 2009. The page content includes a signature and a paragraph about Laura Lane Welch Bush. A 'Good' annotation with a downward arrow points to the top of the page. The left sidebar shows a list of filtered edits, including 'Bratwurst', 'Best Day Ever', 'Motörhead', 'Paul Frees', 'Tom O'Horgan', 'MAST Academy', 'Final Fantasy Crystal...', 'Timeline of World War...', 'Associated TeleVision', 'Raith Rovers F.C. sea...', 'Bristol VR', 'Paper Planes', 'Connected component...', 'Jonny Wilkinson', 'My Love (The Dream...', 'Kalhori', 'Nate Newton (musicia...', 'DaVita', 'Raúl Ramírez', 'START II', 'Planet of the Dead', 'UKTV', 'Princeton Day School', and 'George Washington G...'. The bottom status bar shows the page title and user information.

# Huggle circa 2009

Good



Bad



Probably bad



Probably less bad



The screenshot shows the Huggle web interface. At the top, there is a navigation bar with 'System', 'Queue', 'Go to', 'Revision', 'Page', 'User', 'Browser', and 'Help'. Below this is a toolbar with various icons for navigation and editing. The main content area displays the page for 'Laura Bush', showing a revision as of 11:56, April 11, 2009. The page content includes a signature and a paragraph about Laura Lane Welch Bush, with some text highlighted in yellow and green. A list of filtered edits is visible on the left side, including items like 'Bratwurst', 'Best Day Ever', 'Motörhead', 'Paul Frees', 'Tom O'Horgan', 'MAST Academy', 'Final Fantasy Crystal...', 'Timeline of World War...', 'Associated TeleVision', 'Raith Rovers F.C. sea...', 'Bristol VR', 'Paper Planes', 'Connected component...', 'Jonny Wilkinson', 'My Love (The Dream...', 'Kalhori', 'Nate Newton (musicia...', 'DaVita', 'Raúl Ramírez', 'START II', 'Planet of the Dead', 'UKTV', 'Princeton Day School', and 'George Washington G...'. The bottom status bar shows the current page title and user information.

# Huggle in 2015

Huggle 3 QT-LX on enwiki

System Tools Page Queue HAN User Help

← → >> [edit] [undo] [redo] [warning] [smiley] [mute] [unmute] [delete] [refresh]

Tools

User: Bcschipper Page: Draft:Kenn Davis Load Currently displayed Diff of page: Draft:Kenn Davis (score: -272)

Queue

- default
- 2 Kathleen Wynne
- Pancho Arena
- Mariano Andrés
- Lithuanian language
- User:Anurag.gupta17/Vidya
- Autosomal dominant retinal v
- Peoples of the Caucasus
- Cassock
- Batman v Superman: Dawn o
- 2014-15 Derby County F.C. se
- Voiceless labiodental fricative
- List of shadow holders of the
- Insect euthanasia

History of your changes

ID: Type: Target: Result:

System logs

- Tue Jun 3 19:13:41 2014 Connected to IRC recent changes feed
- Tue Jun 3 19:13:31 2014 Loaded in 259ms
- Tue Jun 3 19:13:31 2014 Extensions: 0
- Tue Jun 3 19:13:31 2014 Loading plugins in /home/petanb/.local/share/data/Wikimedia/Huggle/extensions/
- Tue Jun 3 19:13:31 2014 Home: /home/petanb/.local/share/data/Wikimedia/Huggle/Configuration/

Network (5)

You are now connected to huggle antivandalism network  
Connecting to huggle anti vandalism network

Stroppolo  
ChanServ  
ClueBot  
Petrb  
MusikAnimal

send

Summary: No summary was provided Size change: +104

Line 69:

==== Books ====

Kenn Davis together with John Stanley is the creator of Carver Bascombe, a black Vietnam veteran with military police background who is a private investigator in San Francisco.<ref>{{cite web|url=http://www.sfgate.com/bayarea/article/Kenn-Davis-creator-of-PI-Carver-Bascombe-dies-3203082.php|title=Kenn Davis, creator of PI Carver Bascombe, dies|accessdate=31 May 2014}}</ref> This character first appeared in 1976 in the mystery novel "The Dark Side" that Kenn coauthored with John Stanley.<ref name = Bakeretal >{{cite book | title= Private Eyes: 101 Knights : A Survey of American Detective Fiction 1922-1984 | publisher=Popular Press, 1. edition (January 1, 1985) | first1= Robert | last1=Baker | first2 = Michael | last2 = Nietzel | first3= Bill | last3 = Pronzini | year=1985}}</ref> Carver Bascombe appears in seven more mystery novels.<ref>{{cite web|url=http://www.sfgate.com/bayarea/article/Kenn-Davis-creator-of-PI-Carver-Bascombe-dies-3203082.php|title=Kenn Davis, creator of PI Carver Bascombe, dies|accessdate=31 May 2014}}</ref> **Together with John Stanley**, Kenn Davis was an **[[Edgar Award]]** Nominee for **"The Dark Side" in 1977. In 1985, he was again an [[Edgar Award]]**

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History

User	Size
Bcschipper	13589
Bcschipper	13588
Bcschipper	13119
Bcschipper	13040
Bcschipper	12994
Bcschipper	12559

User info

Flags: +T Score: 0 Level: 0 Edit count: 41

Page

- Draft:Kenn Davis
- User:Bcschipper/sandbo
- Draft:Kenn Davis
- Draft:Kenn Davis
- User:Bcschipper/sandbox
- Draft:Kenn Davis
- User:Bcschipper/sandbox

Processing 0 edits and 0 queries. Whitelisted users: 15358 Queue size: 13 Statistics: 108 edits per minute 5.65 reverts per minute, level 1.05

# Huggle in 2015

Good

Bad

System Tools Page Queue HAN User Help

Tools

User Bcschipper Page Draft:Kenn Davis Load Currently displayed Diff of page: Draft:Kenn Davis (score: -272)

Queue

default

2 Kathleen Wynne

Pancho Arena

Mariano Andrés

Lithuanian language

User:Anurag.gupta17/Vidya

Autosomal dominant retinal v

Peoples of the Caucasus

Cassock

Batman v Superman: Dawn o

2014-15 Derby County F.C. st

Voiceless labiodental fricative

List of shadow holders of the

Insect euthanasia

History of your changes

ID: Type: Target: Result:

System logs

Tue Jun 3 19:13:41 2014 Connected to IRC recent changes feed

Tue Jun 3 19:13:31 2014 Loaded in 259ms

Tue Jun 3 19:13:31 2014 Extensions: 0

Tue Jun 3 19:13:31 2014 Loading plugins in /home/petanb/.local/share/data/Wikimedia/Huggle/extensions/

Tue Jun 3 19:13:31 2014 Home: /home/petanb/.local/share/data/Wikimedia/Huggle/Configuration/

System logs Processes

Processing 0 edits and 0 queries. Whitelisted users: 15358 Queue size: 13 Statistics: 108 edits per minute 5.65 reverts per minute, level 1.05

Summary: No summary was provided Size change: +104

Line 69:

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Bcschipper	13589
Bcschipper	13588
Bcschipper	13119
Bcschipper	13040
Bcschipper	12994
Bcschipper	12559

User info

Flags: +T Score: 0 level: 0 Edit count: 41

Page

Draft:Kenn Davis

User:Bcschipper/sandbo

Draft:Kenn Davis

Draft:Kenn Davis

User:Bcschipper/sandbox

Draft:Kenn Davis

User:Bcschipper/sandbox

Network (5)

You are now connected to huggle

antivandalism network

Connecting to huggle anti vandalism network

Stroppolo

ChanServ

ClueBot

Petrb

MusikAnimal

send

# Huggle in 2015

Good

Bad



Probably bad

Probably less bad



The screenshot displays the Huggle 3 QT-LX interface. At the top, the title bar reads "Huggle 3 QT-LX on enwiki". The menu bar includes "System", "Tools", "Page", "Queue", "HAN", "User", and "Help". Below the menu is a toolbar with navigation and action icons. The main window is titled "User: Bcschipper" and "Page: Draft:Kenn Davis".

On the left, a "Queue" panel lists users, with "User:Anurag.gupta17/Vidya" highlighted in pink. A vertical double-headed arrow on the far left indicates a scale from "Probably bad" at the top to "Probably less bad" at the bottom. Two arrows at the top point from the words "Good" and "Bad" to the "Queue" and "User" menu items respectively.

The central area shows a diff view of "Draft:Kenn Davis". The "Summary" indicates "No summary was provided Size change: +104". The diff shows changes to the text "Kenn Davis together with John Stanley is the creator of Carver Bascombe, a black Vietnam veteran with military police background who is a private investigator in San Francisco." The right side of the diff is highlighted in blue.

On the right, a "History" panel shows a list of users and their sizes, with "Bcschipper" having a size of 13693. Below it, "User info" shows "Flags: +T Score: 0 level: 0 Edit count: 41".

At the bottom, there are "System logs" and "Network (5)" panels. The system logs show connection and loading events from June 3, 2014. The network panel shows connection status and lists other users like Stroppolo, ChanServ, ClueBot, Petrb, and MusikAnimal.

The status bar at the very bottom reads: "Processing 0 edits and 0 queries. Whitelisted users: 15358 Queue size: 13 Statistics: 108 edits per minute 5.65 reverts per minute, level 1.05".

Good

Bad

Welcome!

Probably bad

Probably less bad



Huggle 3 QT-LX on enwiki

System Tools Page Queue HAN User Help

← → >> [Pencil] [Hand] [Wrench] [Warning] [Smiley] [Close] [Sad] [Erase] [Trash] [Share]

Tools

User: Bcschipper Page: Draft:Kenn Davis Load Currently displayed Diff of page: Draft:Kenn Davis (score: -272)

Queue

- default
- 2 Kathleen Wynne
- Pancho Arena
- Mariano Andrés
- Lithuanian language
- User:Anurag.gupta17/Vidya
- Autosomal dominant retinal v
- Peoples of the Caucasus
- Cassock
- Batman v Superman: Dawn o
- 2014-15 Derby County F.C. st
- Voiceless labiodental fricative
- List of shadow holders of the
- Insect euthanasia

History of your changes

ID	Type	Target	Result

System logs

- Tue Jun 3 19:13:41 2014 Connected to IRC recent changes feed
- Tue Jun 3 19:13:31 2014 Loaded in 259ms
- Tue Jun 3 19:13:31 2014 Extensions: 0
- Tue Jun 3 19:13:31 2014 Loading plugins in /home/petanb/.local/share/data/Wikimedia/Huggle/extensions/
- Tue Jun 3 19:13:31 2014 Home: /home/petanb/.local/share/data/Wikimedia/Huggle/Configuration/

System logs Processes

Processing 0 edits and 0 queries. Whitelisted users: 15358 Queue size: 13 Statistics: 108 edits per minute 5.65 reverts per minute, level 1.05

Summary: No summary was provided Size change: +104

Line 69:

== Books ==

Kenn Davis together with John Stanley is the creator of Carver Bascombe, a black Vietnam veteran with military police background who is a private investigator in San Francisco.<ref>{{cite web|url=http://www.sfgate.com/bayarea/article/Kenn-Davis-creator-of-PI-Carver-Bascombe-dies-3203082.php|title=Kenn Davis, creator of PI Carver Bascombe, dies|accessdate=31 May 2014}}</ref> This character first appeared in 1976 in the mystery novel "The Dark Side" that Kenn coauthored with John Stanley.<ref name = Bakeretal >{{cite book | title= Private Eyes: 101 Knights : A Survey of American Detective Fiction 1922-1984 | publisher=Popular Press, 1. edition (January 1, 1985) | first1= Robert | last1=Baker | first2 = Michael | last2 = Nietzel | first3= Bill | last3 = Pronzini | year=1985}}</ref> Carver Bascombe appears in seven more mystery novels.<ref>{{cite web|url=http://www.sfgate.com/bayarea/article/Kenn-Davis-creator-of-PI-Carver-Bascombe-dies-3203082.php|title=Kenn Davis, creator of PI Carver Bascombe, dies|accessdate=31 May 2014}}</ref> **Together with John Stanley**, Kenn Davis was an [[Edgar Award]] Nominee for "The Dark Side" in 1977. In 1985, he was again an [[Edgar Award]]

== Books ==

Kenn Davis together with John Stanley is the creator of Carver Bascombe, a black Vietnam veteran with military police background who is a private investigator in San Francisco.<ref>{{cite web|url=http://www.sfgate.com/bayarea/article/Kenn-Davis-creator-of-PI-Carver-Bascombe-dies-3203082.php|title=Kenn Davis, creator of PI Carver Bascombe, dies|accessdate=31 May 2014}}</ref> This character first appeared in 1976 in the mystery novel "The Dark Side" that Kenn coauthored with John Stanley.<ref name = Bakeretal >{{cite book | title= Private Eyes: 101 Knights : A Survey of American Detective Fiction 1922-1984 | publisher=Popular Press, 1. edition (January 1, 1985) | first1= Robert | last1=Baker | first2 = Michael | last2 = Nietzel | first3= Bill | last3 = Pronzini | year=1985}}</ref> Carver Bascombe appears in seven more mystery novels.<ref>{{cite web|url=http://www.sfgate.com/bayarea/article/Kenn-Davis-creator-of-PI-Carver-Bascombe-dies-3203082.php|title=Kenn Davis, creator of PI Carver Bascombe, dies|accessdate=31 May 2014}}</ref> Kenn Davis was an [[Edgar Award]] Nominee **twice, once in 1977** for "The Dark Side" (with John Stanley) and again in 1985 for "Words Can

History

User	Size
Bcschipper	13589
Bcschipper	13588
Bcschipper	13119
Bcschipper	13040
Bcschipper	12994
Bcschipper	12559

User info

Flags: +T Score: 0 Level: 0 Edit count: 41

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- Draft:Kenn Davis
- User:Bcschipper/sandbo
- Draft:Kenn Davis
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Network (5)

You are now connected to huggle antivandalism network  
Connecting to huggle anti vandalism network

- Stroppolo
- ChanServ
- ClueBot
- Petrb
- MusikAnimal

send



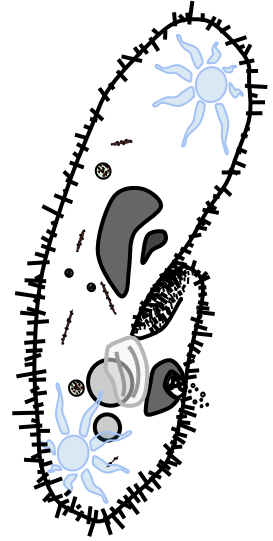
- Quality control in Wikipedia still not designed with newcomer socialization in mind

- Quality control in Wikipedia still not designed with newcomer socialization in mind
- Newcomers (especially those who don't conform) remain marginalized

- Quality control in Wikipedia still not designed with newcomer socialization in mind
- Newcomers (especially those who don't conform) remain marginalized
- Still not seeing gains in the retention of good-faith newcomers

Why?

# Why?



Why did we see changes to some of the sub-systems in Wikipedia, but not others?

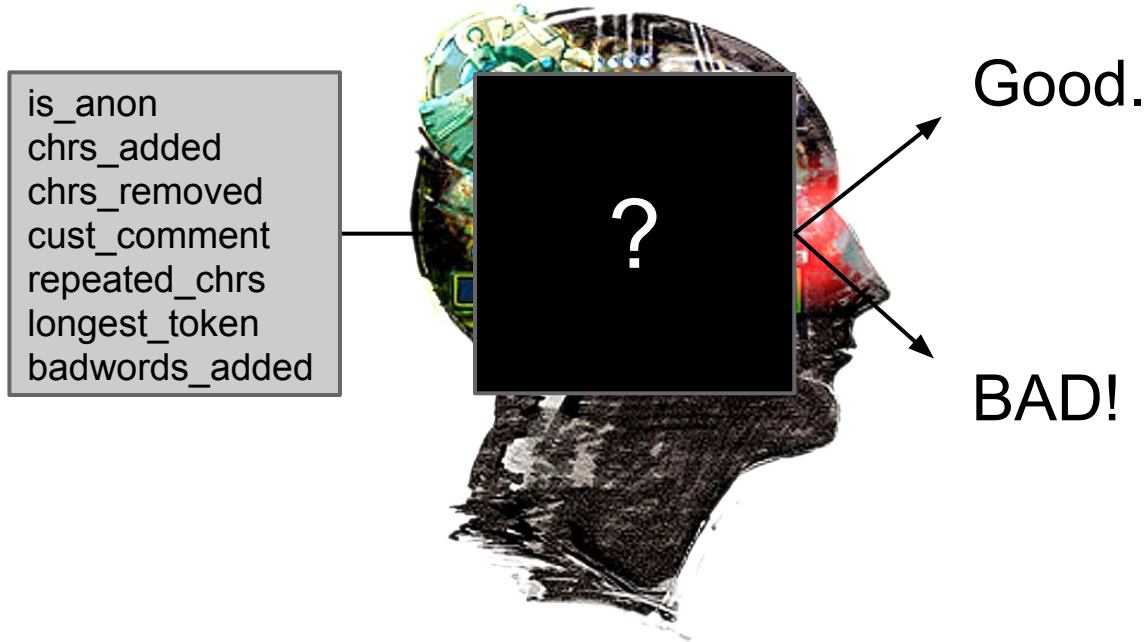
# **Part 3: Infrastructure for socio-technical change**

# The machine classifier



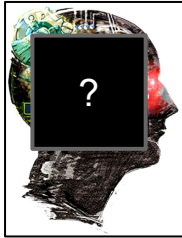
[https://commons.wikimedia.org/wiki/File:Artificial\\_intelligence.jpg](https://commons.wikimedia.org/wiki/File:Artificial_intelligence.jpg)  
Public Domain

# The machine classifier

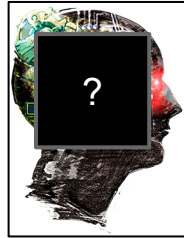




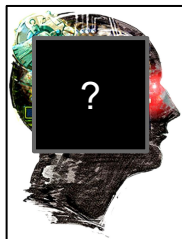
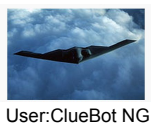
huggle



User:ClueBot NG



     
huggle

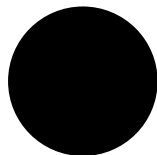


Wikipedia is a firehose ✓

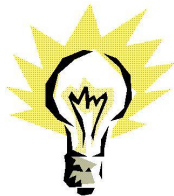
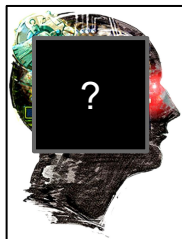
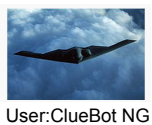
Bad edits must be reverted ✓

Minimize effort wasted on  
quality control work ✓

**Socialize & train the newcomers!** ✓



  
huggle

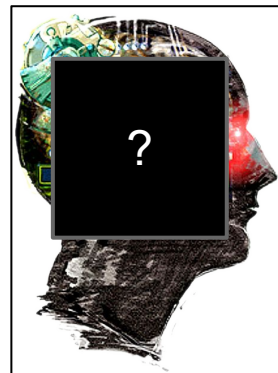
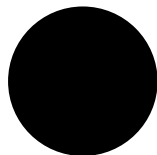


Wikipedia is a firehose ✓

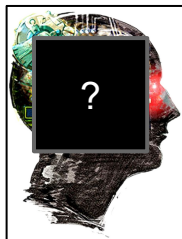
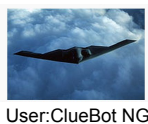
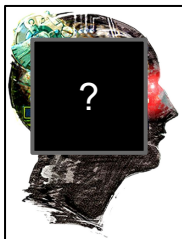
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huggle

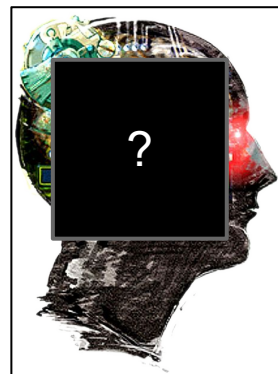
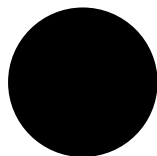


Wikipedia is a firehose ✓

Bad edits must be reverted ✓

Minimize effort wasted on  
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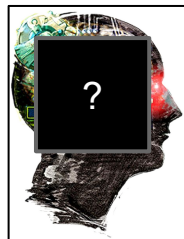
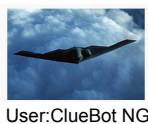
**Socialize & train the newcomers!** ✓



- 20+ research papers on Wikipedia damage detection
- Machine classification not part of standard CS degree
- Many volunteer tool devs don't have a CS degree anyway.

Labor intensive, performance considerations, etc.

  
huggle

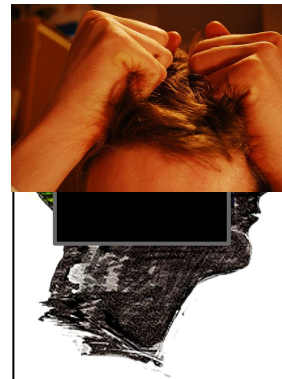
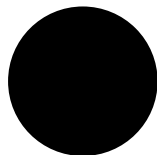


Wikipedia is a firehose ✓

Bad edits must be reverted ✓

Minimize effort wasted on  
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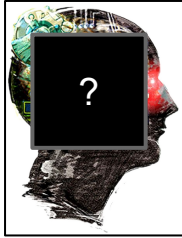
**Socialize & train the newcomers!** ✓



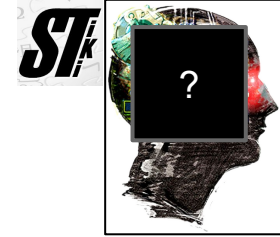
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Labor intensive, performance considerations, etc.

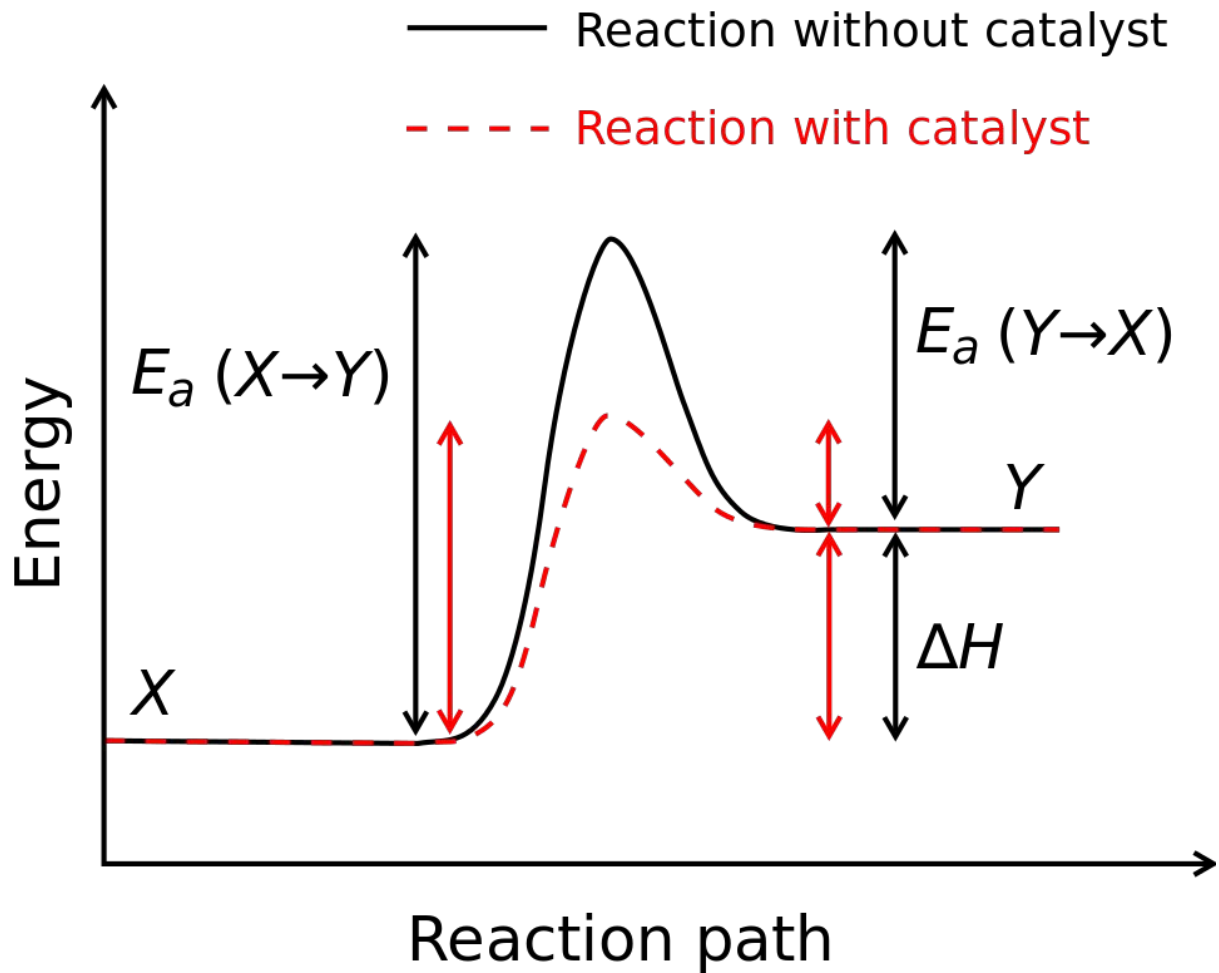
huggle

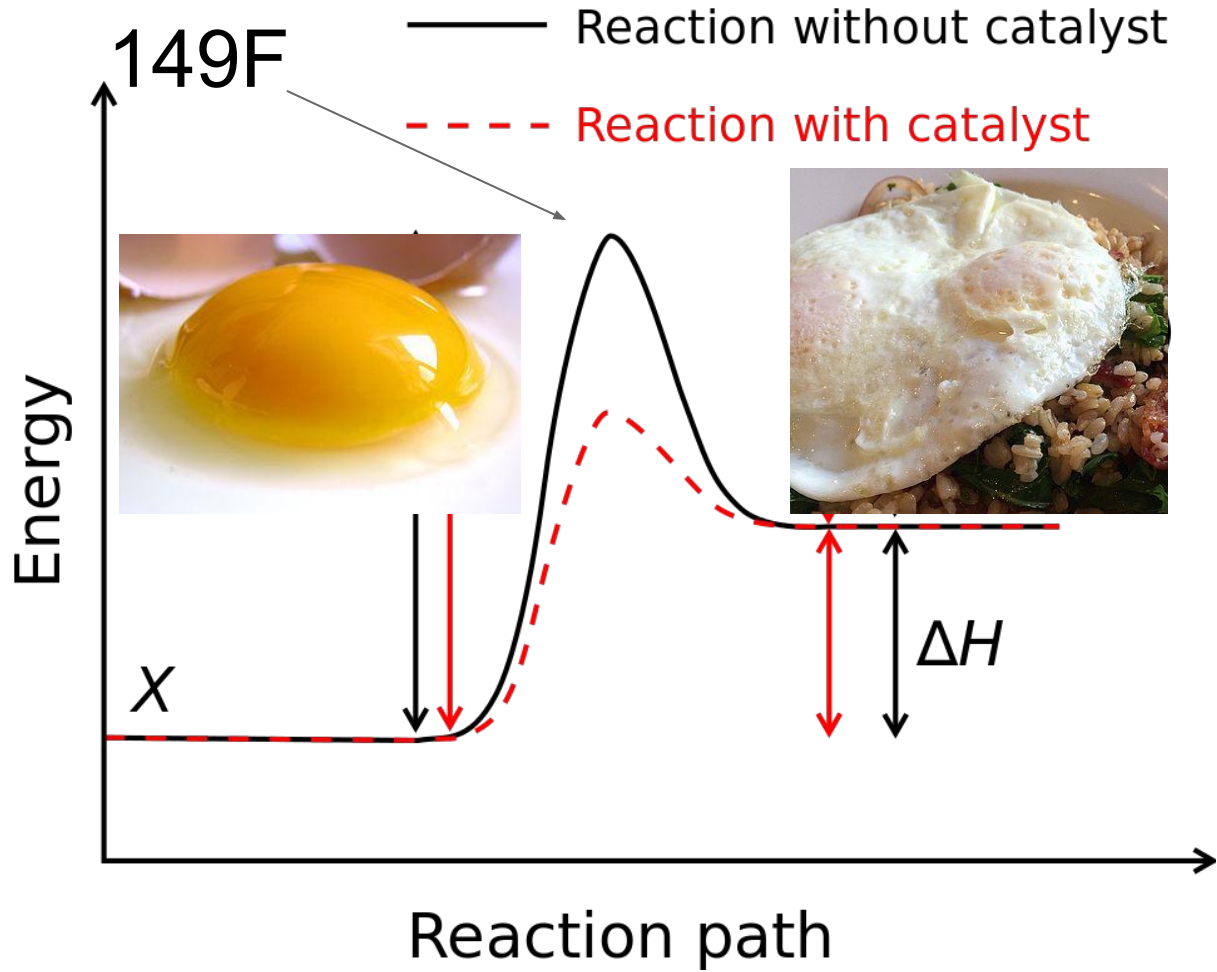


User:ClueBot NG

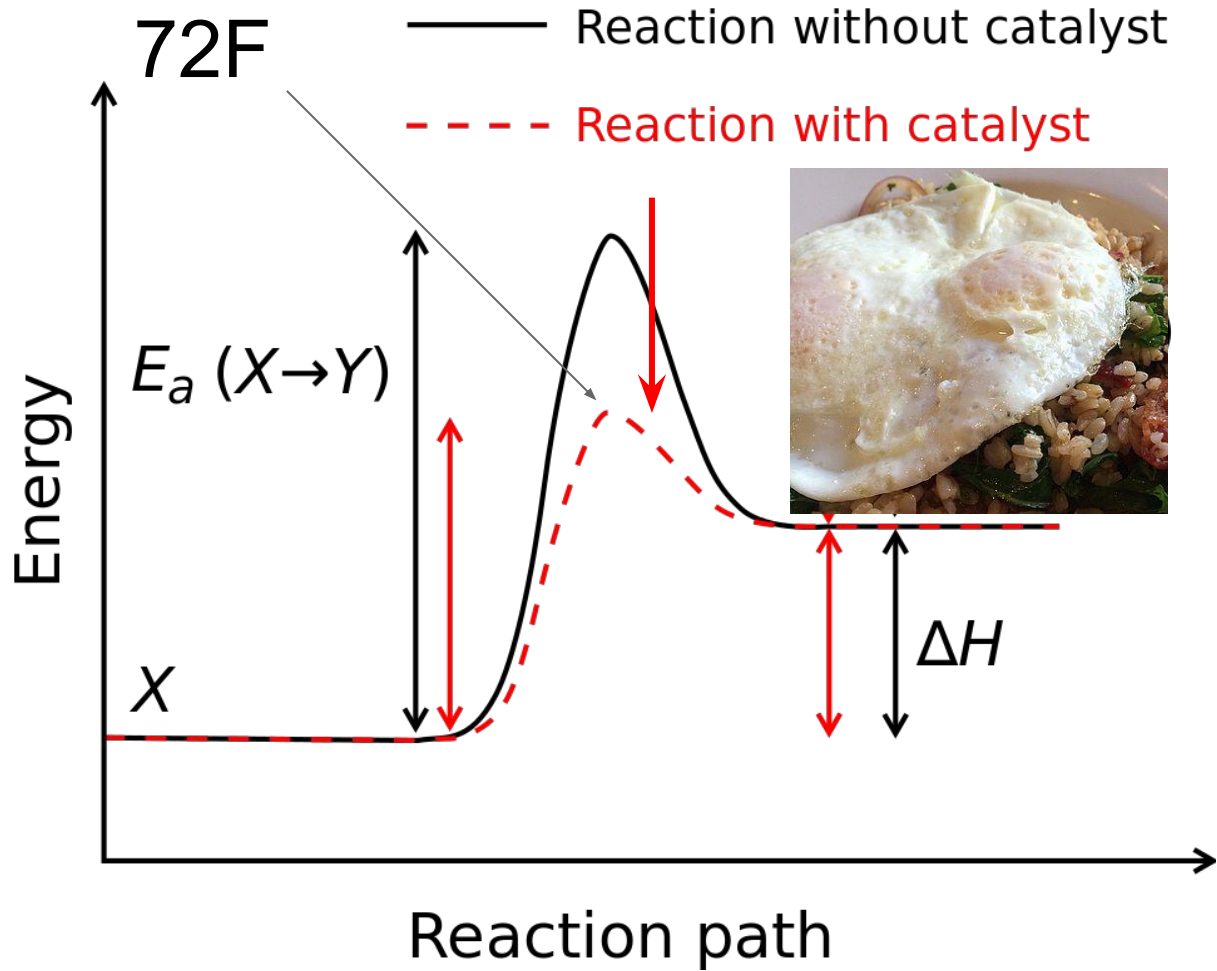


Authored by computer scientists with extensive skills in machine learning and distributed systems.

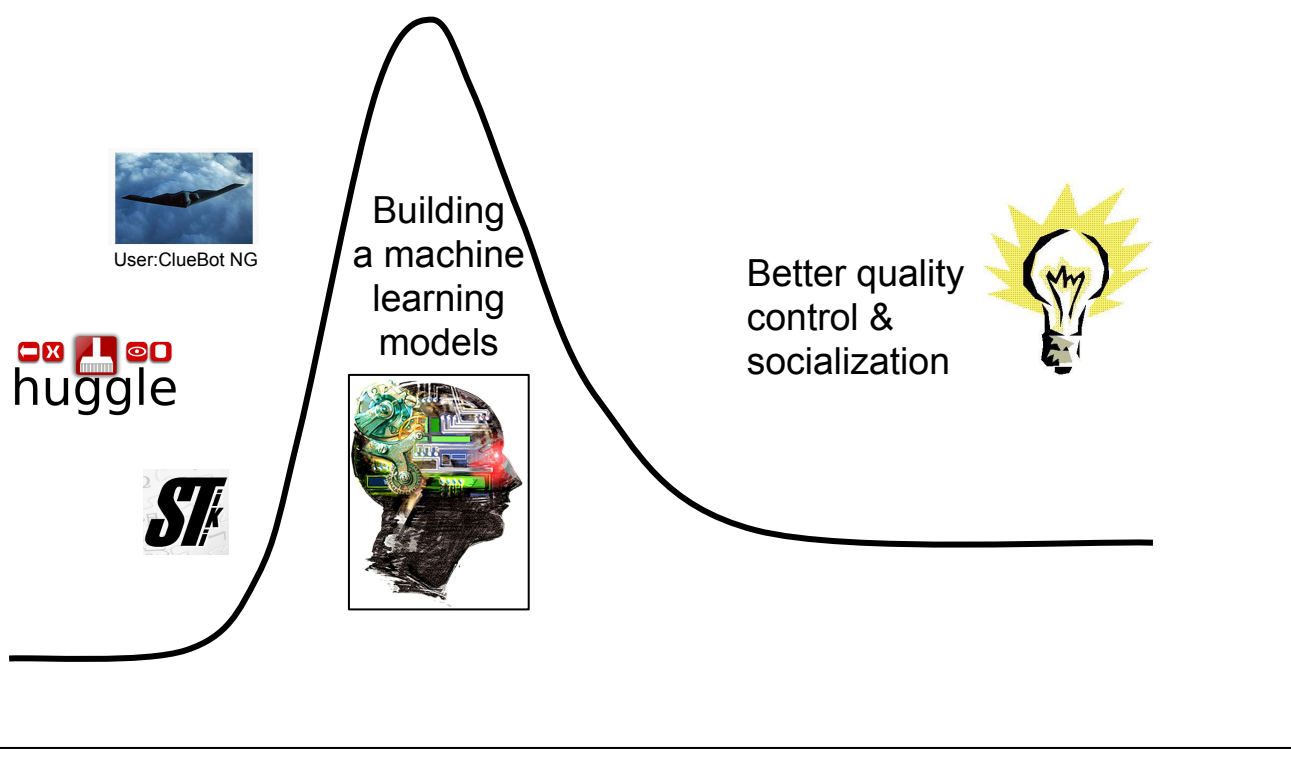








Energy



User:ClueBot NG



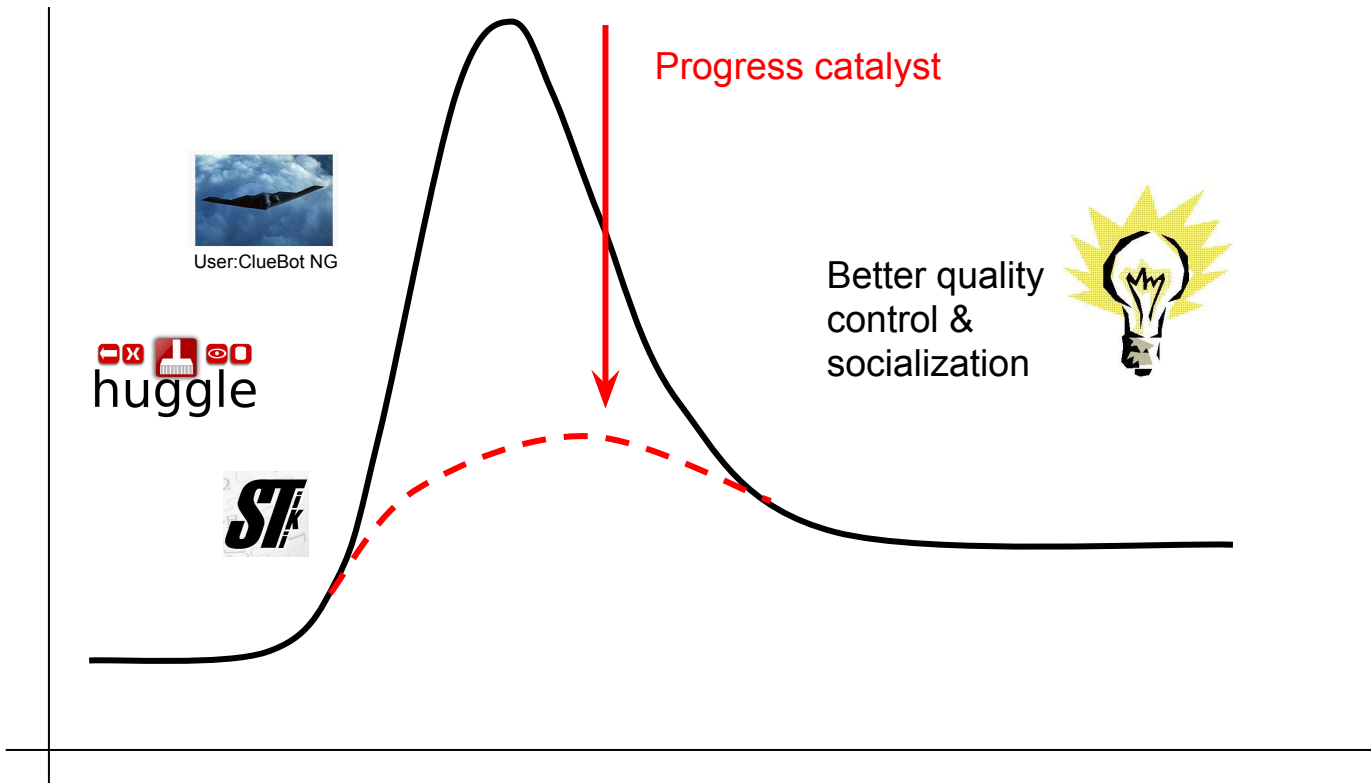
Building  
a machine  
learning  
models

Better quality  
control &  
socialization



Progress ----->

Energy



User:ClueBot NG

huggle



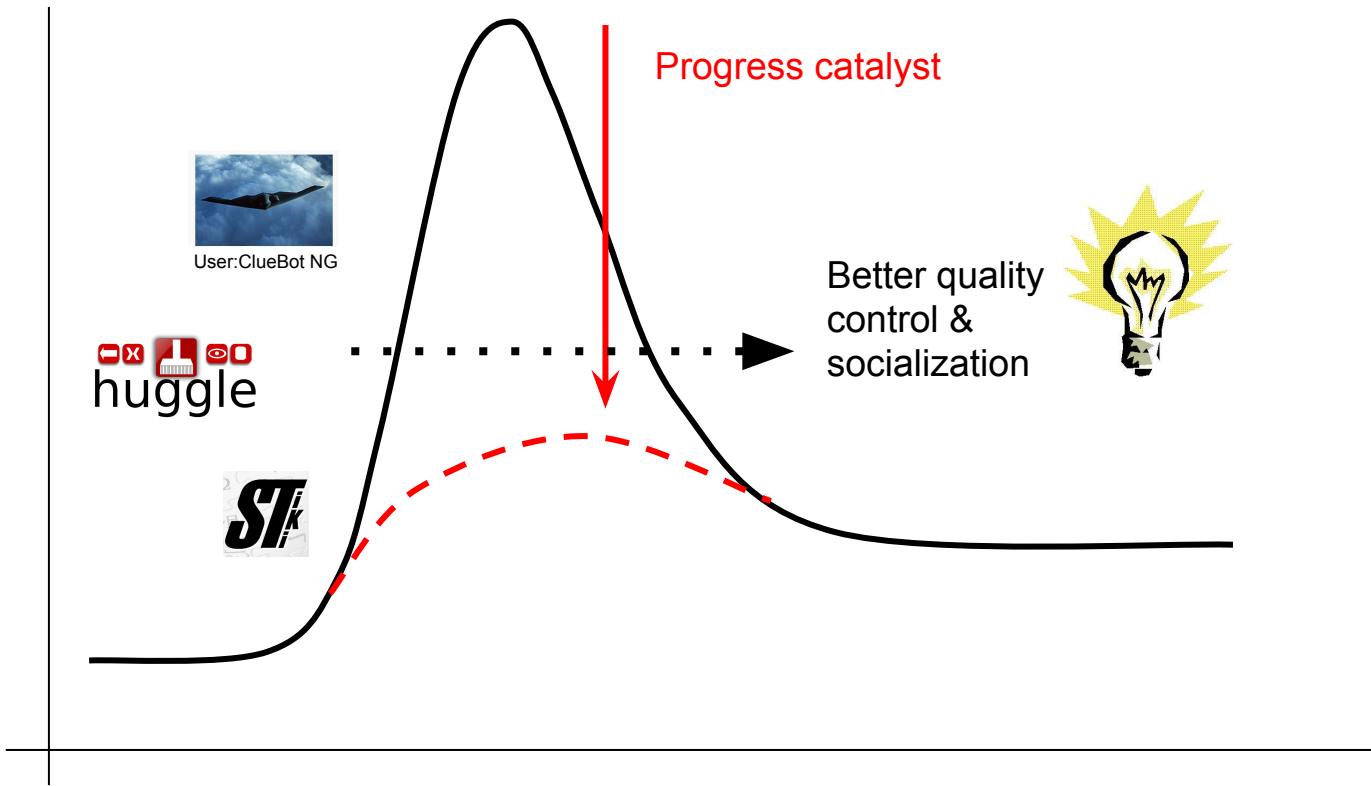
Progress catalyst

Better quality control & socialization



Progress ----->

Energy



User:ClueBot NG

huggle



Progress catalyst

Better quality control & socialization



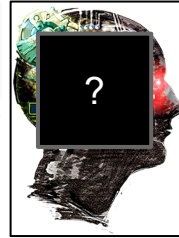
Progress ----->

# Scoring Platform

  
huggle



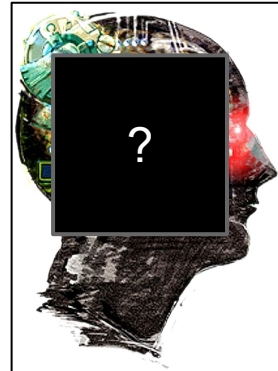
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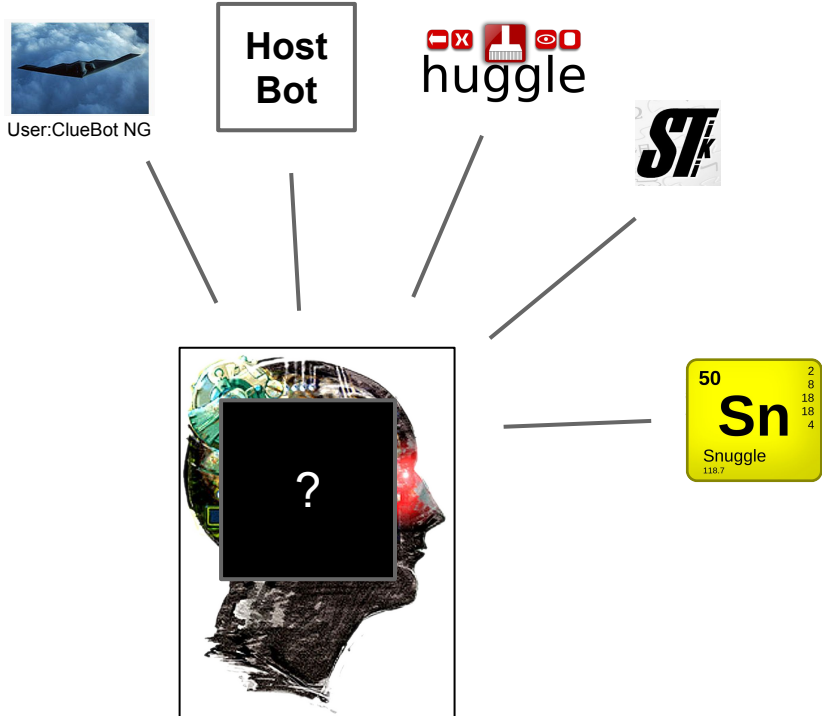
# Scoring Platform



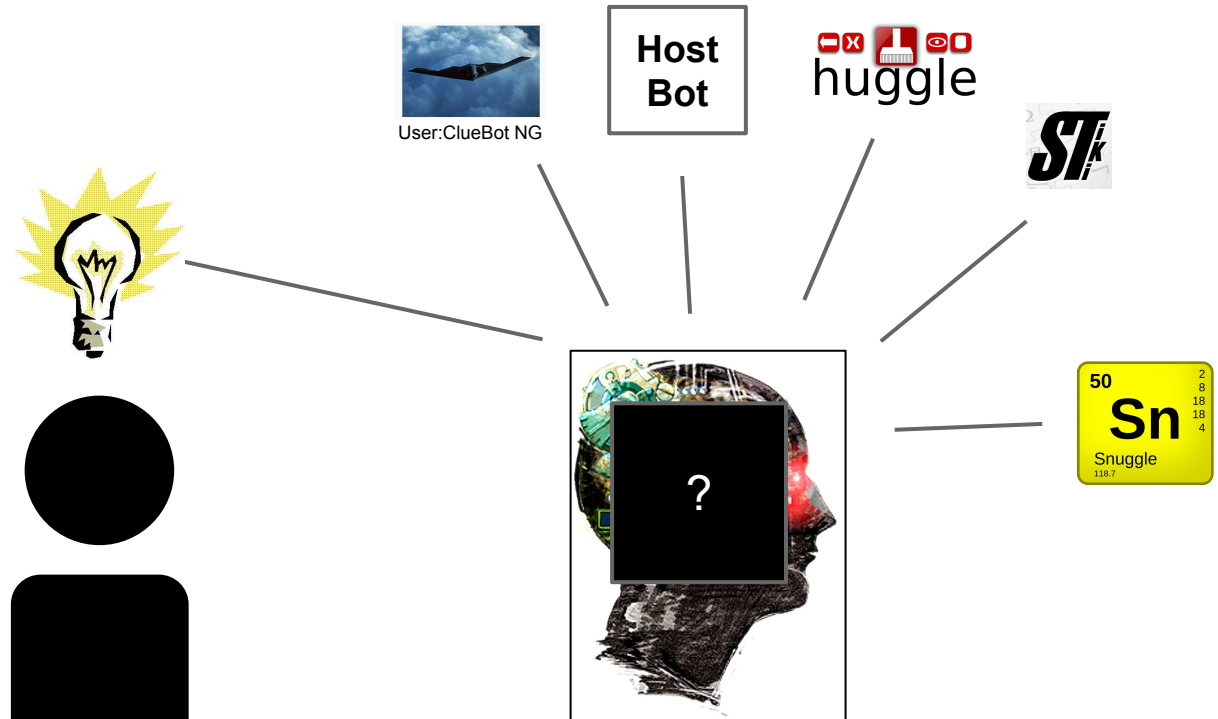
User:ClueBot NG



# Scoring Platform



# Scoring Platform





<http://ores.wmflabs.org/scores/enwiki/damaging/638307884>



<http://ores.wmflabs.org/scores/enwiki/damaging/638307884>

“English Wikipedia”



<http://ores.wmflabs.org/scores/enwiki/damaging/638307884>

Is this edit damaging?



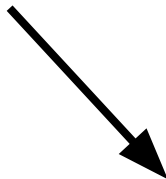
<http://ores.wmflabs.org/scores/enwiki/damaging/638307884>

# <http://ores.wmflabs.org/scores/enwiki/damaging/638307884>

In 2013 Wilson, in collaboration with [[Mikhail Baryshnikov]] and co-starring [[Willem Dafoe]], developed "[[**The Old Woman (play)**The Old Woman]]", an adaptation of the work by the Russian author [[Daniil Kharms]]. The play premiered at MIF13, Manchester International Festival.<ref>{{Cite web|url = http://www.mif.co.uk/event/the-old-woman|title = The Old Woman|author = Robert Wilson, Mikhail Baryshnikov, Willem Dafoe|date = 2013|accessdate = 2014-11-23|website = Manchester International Festival|publisher = Manchester International Festival|last = Jansch|first = Lucie}}</ref> Wilson wrote that he and [[Mikhail Baryshnikov|Baryshnikov]] have discussed creating a play together for years, perhaps based on a Russian text.<ref>{{Cite web|url = http://calperformances.org/learn/program\_notes/2014/pn\_oldwoman.pdf|title = Cal Performances University of California, Berkeley Playbill|date = 2014|accessdate = 2014-

# <http://ores.wmflabs.org/scores/enwiki/damaging/638307884>

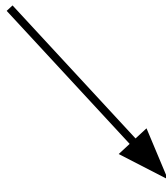
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```
"638307884": {  
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  }  
}
```

# <http://ores.wmflabs.org/scores/enwiki/damaging/638307884>

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"638307884": {  
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# <http://ores.wmflabs.org/scores/enwiki/damaging/642215410>

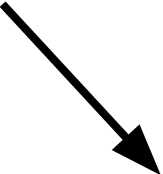
"Intelligence" is hard to define, whether in dogs, other animals, or humans. The ability to learn quickly might be taken as a sign of [[intelligence (trait)|intelligence]], but such evidence must be interpreted with care, because learning speed may be affected by such things as the effectiveness of the rewards used in training or the motivation or activity level of the dog. For example, some breeds, such as [[Siberian Husky|Siberian Huskies]], are said to be not particularly rewarded by pleasing their owners, but quickly learn to escape from yards or catch small animals, often using ingenious ways of doing both.  
<ref><http://siberianhuskycentral.com/siberian-husky-dogs-are-siberian-huskies-good-dogs></ref>

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+

# <http://ores.wmflabs.org/scores/enwiki/damaging/638307884>

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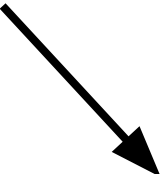


```
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```

# <http://ores.wmflabs.org/scores/enwiki/damaging/642215410>

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<ref><http://siberianhuskycentral.com/siberian-husky-dogs/are-siberian-huskies-good-dogs></ref>

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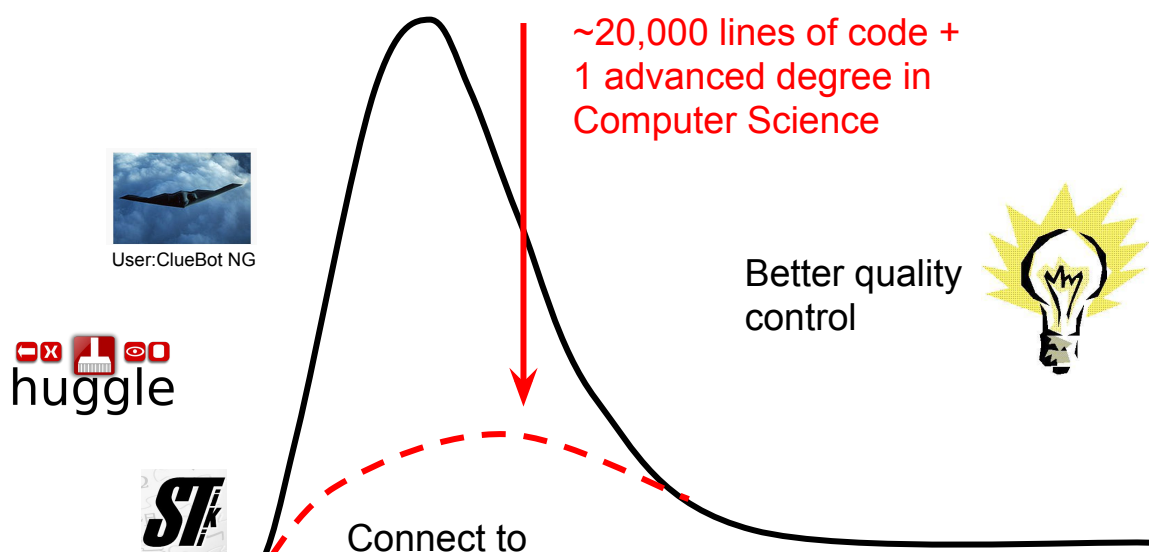


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    "true": 0.920  
  }  
}
```



- Fast (median delay 0.5 seconds)
- Scale-able & redundant
- Comparable to the state-of-the-art

Energy



User:ClueBot NG

huggle



Connect to  
ORES via  
HTTP

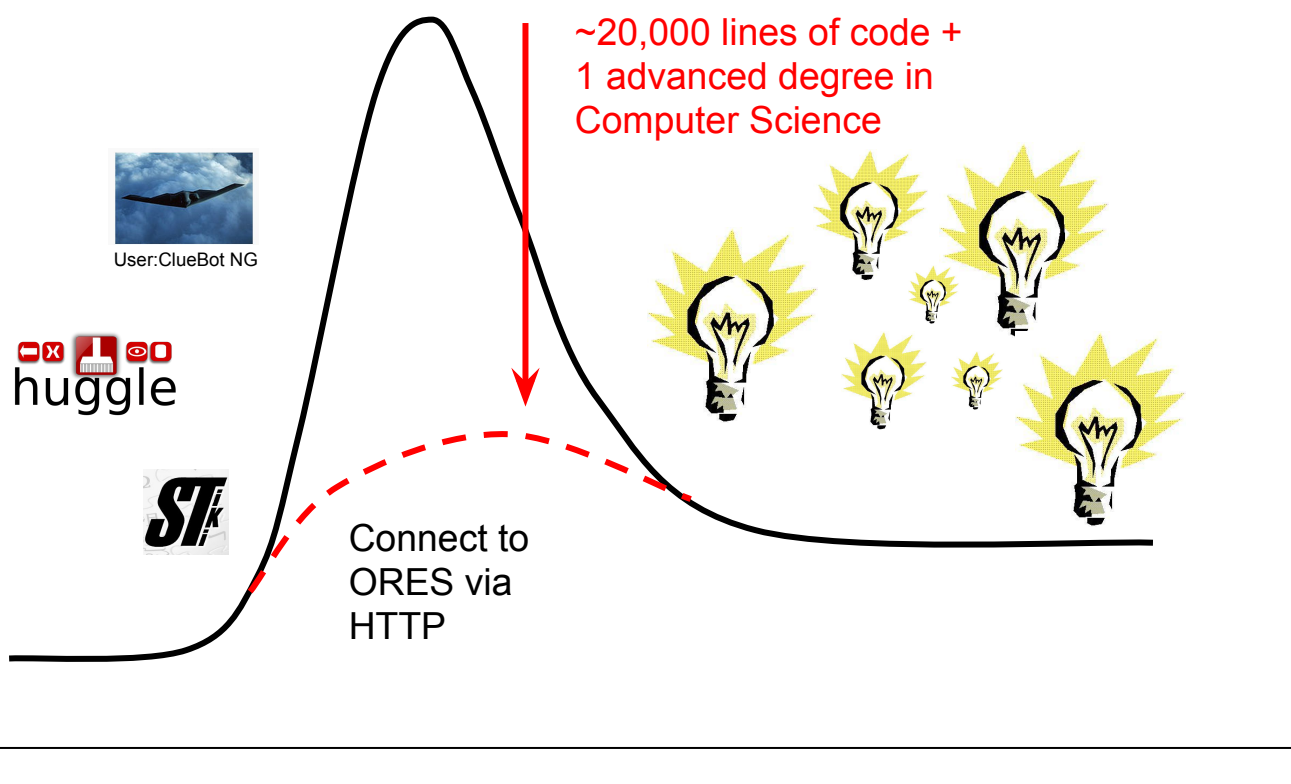
~20,000 lines of code +  
1 advanced degree in  
Computer Science

Better quality  
control



Progress ----->

Energy



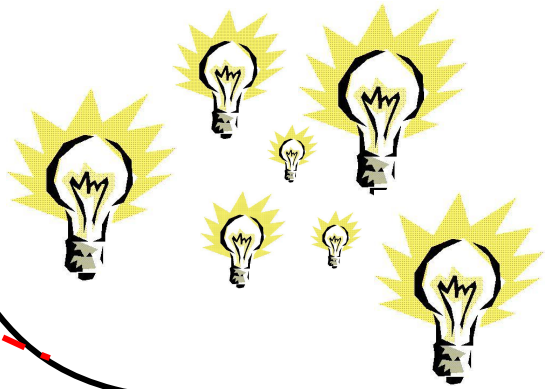
User:ClueBot NG

huggle



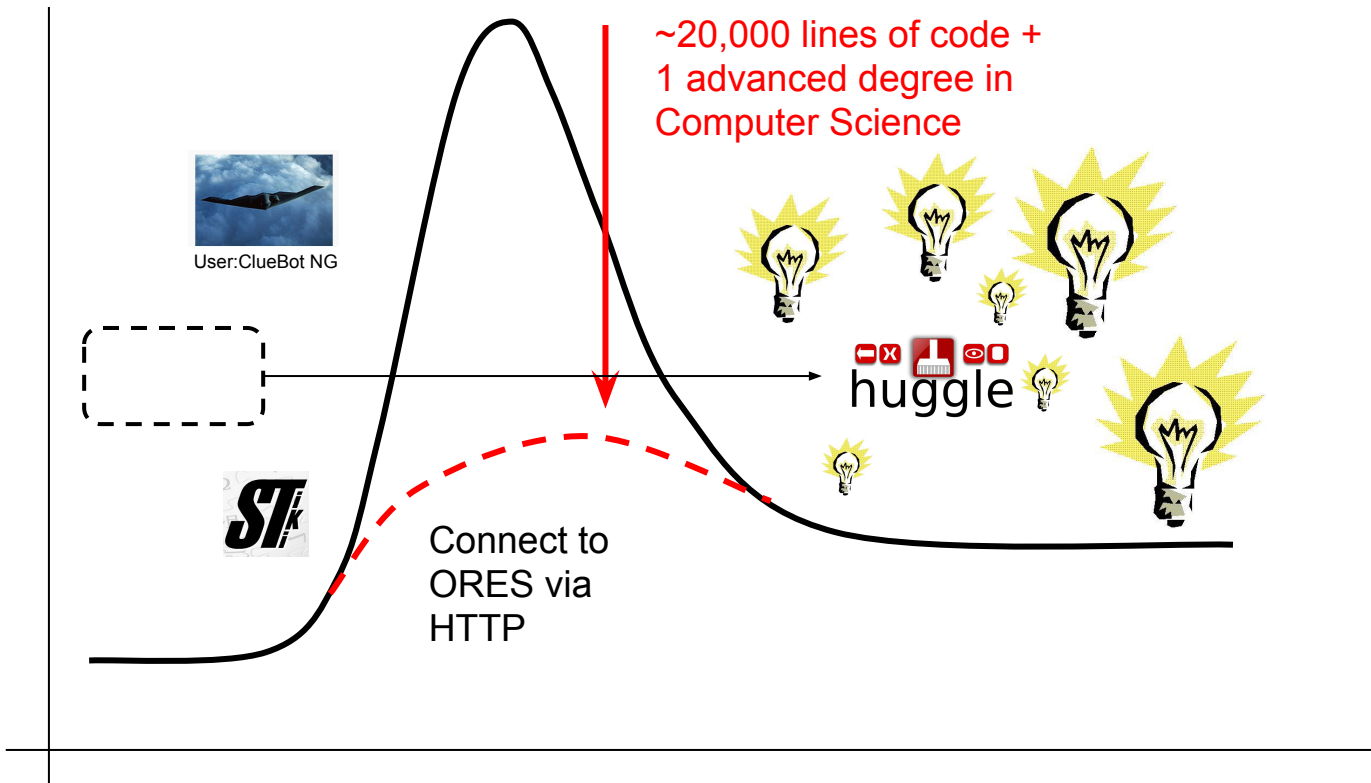
Connect to  
ORES via  
HTTP

~20,000 lines of code +  
1 advanced degree in  
Computer Science



Progress ----->

Energy

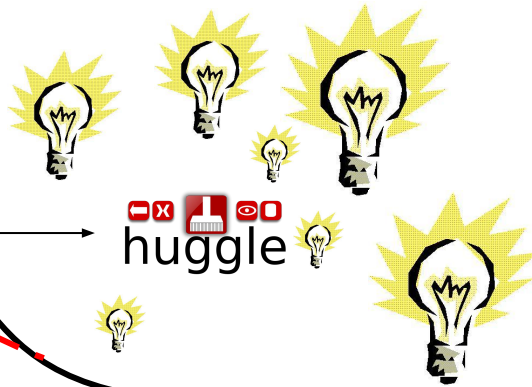


User:ClueBot NG



Connect to  
ORES via  
HTTP

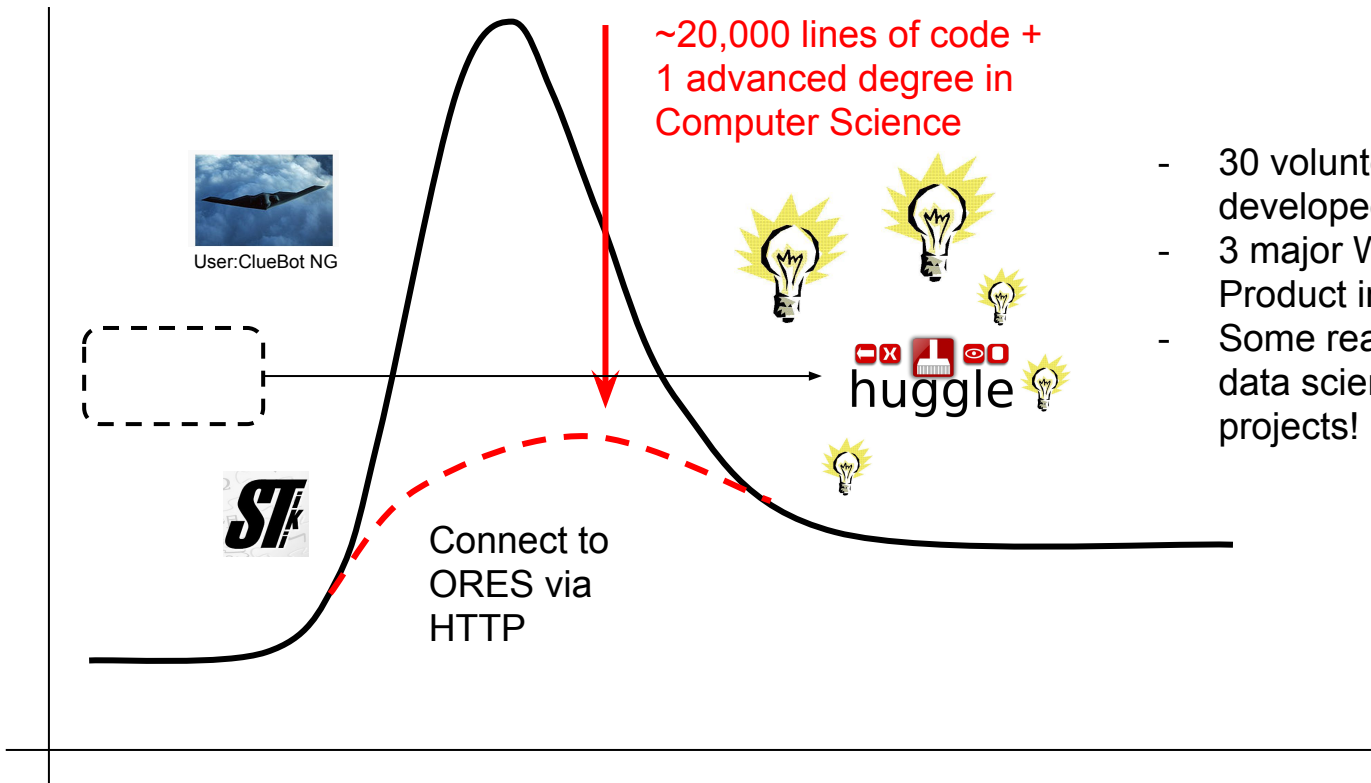
~20,000 lines of code +  
1 advanced degree in  
Computer Science



huggle

Progress ----->

Energy

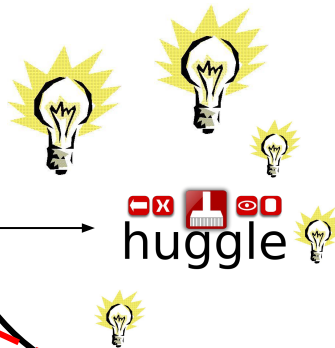


User:ClueBot NG



Connect to  
ORES via  
HTTP

~20,000 lines of code +  
1 advanced degree in  
Computer Science



- 30 volunteer developed tools
- 3 major Wikimedia Product initiatives
- Some really cool data science projects!

Progress ----->

# **Part 3.5: Feminist inspiration**

Critique → Design



**“Subjective Algorithms”**

## “Subjective algorithms”

"algorithms, often aided by big data, now make decisions in subjective realms where there is **no right decision**, and no anchor with which to judge outcomes."

Tufekci, Z. (2015). Algorithms in our Midst: Information, Power and Choice when Software is Everywhere. CSCW (pp. 1918-1918). ACM.





# “Subjective algorithms”

"algorithms, often aided by big data, now make decisions in subjective realms where there is **no right decision**, and no anchor with which to judge outcomes."

Tufekci, Z. (2015). Algorithms in our Midst: Information, Power and Choice when Software is Everywhere. CSCW (pp. 1918-1918). ACM.

What is good? relevant?  
important? desirable? valuable?





David Auerbach ✓

@AuerbachKeller

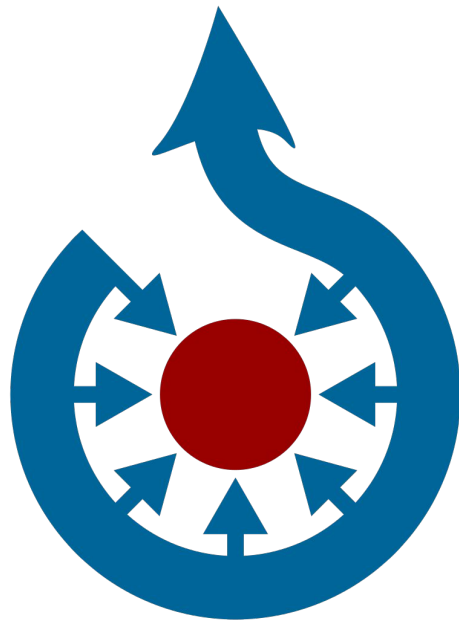


Google's Perspective API judges "Few muslims are a terrorist threat" to be 79% toxic. False positive? My take:



Artificial intelligence isn't good enough to "fight the rise of online mobs," as Google hopes  
[technologyreview.com](http://technologyreview.com)

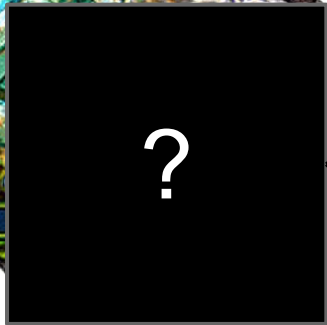
8:26 AM · Feb 23, 2017



Who is allowed to participate? Who gets labeled “bad-faith”?

What types of contributions will be labeled “damaging”?

is\_anon  
chrs\_added  
chrs\_removed  
cust\_comment  
repeated\_chrs  
longest\_token  
badwords\_added



Good.

**BAD!**

is\_anon  
chrs\_added  
chrs\_removed  
cust\_comment  
repeated\_chrs  
longest\_token  
badwords\_added



**Good.**  
and some important bad  
stuff

**BAD!**  
and some important  
good stuff

Please exercise *extreme caution* to avoid encoding racism or other biases into an AI scheme. [...] [Wnt \(talk\)](#) 12:58, 20 February 2015 (UTC)

From [Wikipedia:Wikipedia Signpost/2015-02-18/Special\\_report](https://en.wikipedia.org/wiki/Wikipedia:Signpost/2015-02-18/Special_report)

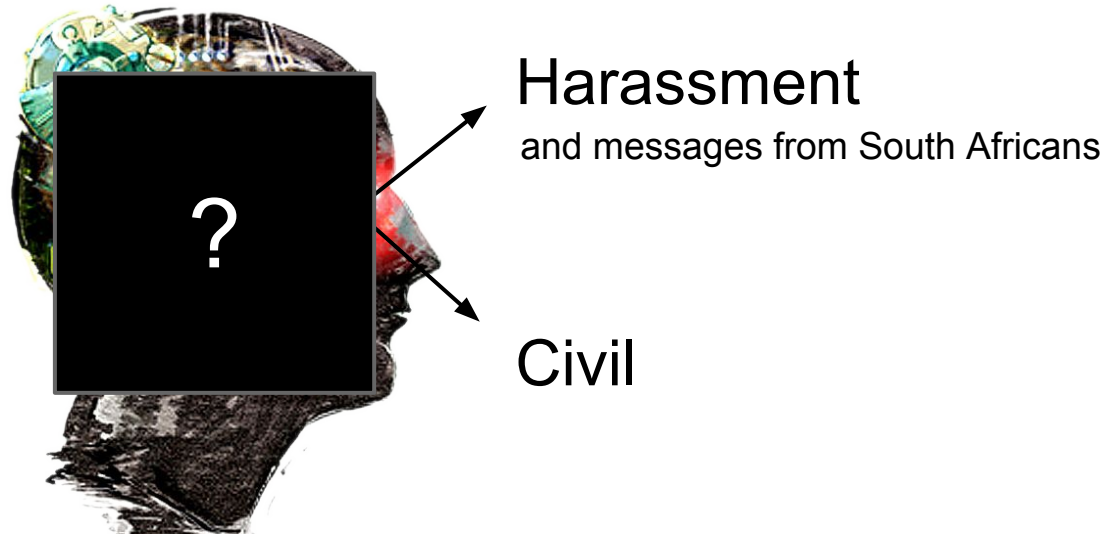
Please exercise *extreme caution* to avoid encoding racism or other biases into an AI scheme. [...] [Wnt \(talk\)](#) 12:58, 20 February 2015 (UTC)

From [Wikipedia:Wikipedia Signpost/2015-02-18/Special\\_report](https://en.wikipedia.org/wiki/Wikipedia:Signpost/2015-02-18/Special_report)



Please exercise *extreme caution* to avoid encoding racism or other biases into an AI scheme. [...] [Wnt \(talk\)](#) 12:58, 20 February 2015 (UTC)

From [Wikipedia:Wikipedia Signpost/2015-02-18/Special\\_report](https://en.wikipedia.org/wiki/Wikipedia:Signpost/2015-02-18/Special_report)





# Two stories



# Two stories



# The Italian “ha”

Literally: Not a laughing matter

# :m:Talk:ORES#Checklist for itwiki setup.

- Correzioni verbo avere: false positives related to italian verb "have" (why?)  
--Rotpunkt (talk) 12:17, 23 November 2015 (UTC)

## :it:Progetto:Patrolling/ORES

### Correzioni verbo avere [ [modifica wikipagina](#) ]

- [Speciale:Diff/76758000](#) (98%) correzione da minuscolo a maiuscolo del verbo avere, dopo inserimento del punto, da parte di un registrato
- [Speciale:Diff/75006952](#) (100%) correzione verbo avere da parte di un IP
- [Speciale:Diff/73011992](#) (97%) correzione verbo avere da parte di un utente registrato
- [Speciale:Diff/75589352](#) (97%) correzione verbo avere da parte di un utente registrato
- [Speciale:Diff/76784148](#) (95%) correzione con modifica da maiuscolo a minuscolo del verbo "ha", da parte di un utente registrato
- [Speciale:Diff/76793663](#) (89%) modifica che coinvolge il verbo avere, da parte di un IP
- [Speciale:Diff/76797177](#) (95%) modifica che coinvolge il verbo avere, da parte di un IP
- [Speciale:Diff/76806685](#) (98%) modifica che coinvolge il verbo avere, da parte di un IP
- [Speciale:Diff/76805417](#) (98%) modifica che coinvolge il verbo avere, da parte di un IP
- [Speciale:Diff/76781896](#) (90%) modifica che coinvolge il verbo avere, da parte di un IP
- [Speciale:Diff/76781249](#) (92%) modifiche alla forma della frase, tra cui il maiuscolo con il verbo avere, da parte di un IP
- [Speciale:Diff/76826639](#) (98%) modifica che coinvolge il verbo avere, da parte di un IP
- [Speciale:Diff/76831709](#) (100%) modifica che coinvolge il verbo avere, da parte di un IP

...  
informals\_added  
badwords\_added  
...



Good edit

Damaging edit



Badwords: Curse words, racial slurs and other offensive terminology

Informals: Casual speak that would be welcome on a talk page, but not within an article.



Badwords: Curse words, racial slurs and other offensive terminology

Informals: Casual speak that would be welcome on a talk page, but not within an article.

For example "hello" or "hahaha".



Badwords: Curse words, racial slurs and other offensive terminology

Informals: Casual speak that would be welcome on a talk page, but not within an article.

For example "hello" or "hahaha".



[revscoring/languages/english.py#L163](#)

```
160 r"don'?t", r"dum+b*(y|ies|er|est)?(ass)?",
161 r"d+?u+?d+?e+?\w*",
162 r"good[-_]?bye",
163 r"h+[aiou]+(h+[aeiou]*)*",
164 r"mw?[au]+h+[aiou]+(h+[aeiou]*)*",
165 r"h+[e]+(h+[aeiou]*)+",
166 r"hel+?o+", r"h(aa+?|e+?)y+?",
167 r"h+?m+?"
```

[revscoring/languages/tests/test\\_english.py#L103](#)

```
100 "dumb", "dummy", "dumbest", "dummies",
101 "dad", "daddy", "dada",
102 "goodbye", "good-bye",
103 "hi", "hihi", "ha", "haha", "hehe", "ho",
104 "mwuhahaha",
105 "hello", "helo", "hellloooo",
106 "hey", "heeeey", "haay",
107 "hm", "hmmmm", "hhhmmmm",
```

[revscoring/languages/english.py#L163](#)

```
160 r"don'?t", r"dum+b*(y|ies|er|est)?(ass)?",
161 r"d+?u+?d+?e+?\w*",
162 r"good[-_]?bye",
163 r"h+[aiou]+(h+[aeiou]*)*",
164 r"mw?[au]+h+[aiou]+(h+[aeiou]*)*",
165 r"h+[e]+(h+[aeiou]*)+",
166 r"hel+?o+", r"h(aa+?|e+?)y+?",
167 r"h+?m+?"
```

[revscoring/languages/tests/test\\_english.py#L103](#)

```
100 "dumb", "dummy", "dumbest", "dummies",
101 "dad", "daddy", "dada",
102 "goodbye", "good-bye",
103 "hi", "hihi", "ha", "haha", "hehe", "ho",
104 "mwuhahaha",
105 "hello", "helo", "helllloooo",
106 "hey", "heeeey", "haay",
107 "hm", "hmmm", "hhhhmmm",
```

“Ha” is laughing in English, but “Ha” is **not** laughing in Italian!

Hi [Rotpunkt](#). Sorry for the long wait. We've been doing a lot of infrastructural work around [ORES](#), so I wasn't able to look at this as quickly as I'd hoped. ... So, I've been experimenting with different modeling strategies. It seems that we can get a little bit better statistical "fitness" with a [en:gradient boosting](#) (GB) model than the old linear [en:support vector machine](#) (SVM) model. Here's the new scores that I get for these three edits:

- [it:Special:Diff/77186648](#) (67.6%)
- [it:Special:Diff/77186644](#) (75.7%)
- [it:Special:Diff/77173988](#) (36.9%)

... <snip> ...

@Halfak Nice job, thanks from itwiki! --[Rotpunkt](#) ([talk](#)) 15:58, 25 March 2016 (UTC)

# **Anonymous editors**

# Anonymous editors

Maniphest > T118982

✓ hewiki "reverted" model weights strongly against anons

✓ Closed, Resolved Public

Maniphest > T129624

✓ Investigate nlwiki 'reverted' model seems broken (always ~0.89 for anonymous edits)

✓ Closed, Resolved Public

Otherwise, anons seemed to dominate false-positive reports from every wiki

**... maybe anons are really  
bad.**

... **maybe anons are really bad.**

- Generally, anon edits are **twice** as likely to be vandalism

**... maybe anons are really bad.**

- Generally, anon edits are **twice** as likely to be vandalism
- **90%** of anonymous edits are good



[https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is\\_anon=false](https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is_anon=false)

[https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is\\_anon=false](https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is_anon=false)

```
{"prediction": false,  
  "probability": {"false": 0.656,  
                  "true": 0.344}}
```

[https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is\\_anon=false](https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is_anon=false)

```
{"prediction": false,  
  "probability": {"false": 0.656,  
                 "true": 0.344}}
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[https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is\\_anon=true](https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is_anon=true)

```
{"prediction": false,  
  "probability": {"false": 0.541,  
                 "true": 0.459}}
```

[https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is\\_anon=false](https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is_anon=false)

```
{"prediction": false,  
  "probability": {"false": 0.656,  
                 "true": 0.344}}
```

[https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is\\_anon=true](https://ores.wmflabs.org/v2/scores/enwiki/damaging/642345235?feature.revision.user.is_anon=true)

```
{"prediction": false,  
  "probability": {"false": 0.541,  
                 "true": 0.459}}
```

Just by being “anon”, we score this edit 11.5% more likely to be damaging to the article.

# Modeling strategies

[https://en.wikipedia.org/wiki/Support\\_vector\\_machine#Linear\\_SVM](https://en.wikipedia.org/wiki/Support_vector_machine#Linear_SVM)

Linear SVM [ edit ]

We are given a training dataset of  $n$  points of the form

$$(\vec{x}_1, y_1), \dots, (\vec{x}_n, y_n)$$

where the  $y_i$  are either 1 or  $-1$ , each indicating the class to which the point  $\vec{x}_i$  belongs. Each  $\vec{x}_i$  is a  $p$ -dimensional *real* vector. We want to find the "maximum-margin hyperplane" that divides the group of points  $\vec{x}_i$  for which  $y_i = 1$  from the group of points for which  $y_i = -1$ , which is defined so that the distance between the hyperplane and the nearest point  $\vec{x}_i$  from either group is maximized.

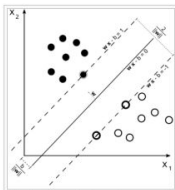
Any hyperplane can be written as the set of points  $\vec{x}$  satisfying

$$\vec{w} \cdot \vec{x} + b = 0,$$

where  $\vec{w}$  is the (not necessarily normalized) *normal vector* to the hyperplane. The parameter  $\frac{b}{\|\vec{w}\|}$  determines the offset of the hyperplane from the origin along the normal vector  $\vec{w}$ .

**Hard-margin** [ edit ]

If the training data are *linearly separable*, we can select two parallel hyperplanes that separate the two classes of data, so that the distance between them is as large as possible. The region bounded by these two hyperplanes is called the "margin", and the maximum-margin hyperplane is the hyperplane that lies halfway between them. These hyperplanes can be described by the equations



[https://en.wikipedia.org/wiki/Gradient\\_boosting](https://en.wikipedia.org/wiki/Gradient_boosting)

## Gradient boosting

A C-class article from Wikipedia, the free encyclopedia

**Gradient boosting** is a *machine learning* technique for *regression* and *classification* problems, which produces a prediction model in the form of an *ensemble* of weak prediction models, typically *decision trees*. It builds the model in a stage-wise fashion like other *boosting* methods do, and it generalizes them by allowing optimization of an arbitrary *differentiable loss function*.

The idea of gradient boosting originated in the observation by [Leo Breiman](#)<sup>[1]</sup> that boosting can be interpreted as an optimization algorithm on a suitable cost function. Explicit regression gradient boosting algorithms were subsequently developed by [Jerome H. Friedman](#)<sup>[2][3]</sup> simultaneously with the more general functional gradient boosting perspective of Llew Mason, Jonathan Baxter, Peter Bartlett and Marcus Frean.<sup>[4][5]</sup> The latter two papers introduced the abstract view of boosting algorithms as iterative *functional gradient descent* algorithms. That is, algorithms that optimize a cost *function* over function space by iteratively choosing a function (weak hypothesis) that points in the negative gradient direction. This functional gradient view of boosting has led to the development of boosting algorithms in many areas of machine learning and statistics beyond regression and classification.

# User classes

## Anon editor

```
{"feature.revision.user.is_anon": true,
 "feature...seconds_since_registration": 0,
 "feature.revision.user.has_advanced_rights": false,
 "feature.revision.user.is_admin": false,
 "feature.revision.user.is_bot": false,
 "feature.revision.user.is_curator": false}
```


## New editor (2h since registration)

```
{"feature.revision.user.is_anon": false,
 "feature...seconds_since_registration": 18000,
 "feature.revision.user.has_advanced_rights": false,
 "feature.revision.user.is_admin": false,
 "feature.revision.user.is_bot": false,
 "feature.revision.user.is_curator": false}
```

## User:EpochFail (8 years since registration)

```
{"feature.revision.user.is_anon": false,
 "feature...seconds_since_registration": 257995021,
 "feature.revision.user.has_advanced_rights": false,
 "feature.revision.user.is_admin": false,
 "feature.revision.user.is_bot": false,
 "feature.revision.user.is_curator": false}
```

**Wiki-Labels** is a [human computation](#) service for Wikipedia. In order perform difficult analyses and train intelligent wiki-tools (e.g. for [detecting vandalism](#) and [assessing the quality of articles](#)), we need [labeled data](#) and lots of it. Wiki-Labels is a tool that makes it easy to collaboratively label wiki artifacts (like revisions) quickly and easily.

- [Documentation](#)
- [github repo](#) 

## Campaigns

- Edit Quality -- 2014 10k sample

<div style="background-color: #00ff00; padding: 2px;">2015-05-02 (10/10)</div>	review
<div style="border: 1px solid #ccc; padding: 2px;">2015-05-02 (0/10)</div>	<a href="#">open</a>

[request workset](#)

+ Edit Type -- 2015 january sample

[fullscreen](#)

Workset

Damaging? [Yes](#) [No](#)      Good faith? [Yes](#) [No](#)

[Save](#)

**Thomas S. Hinde**


Diff for revision [648970723](#)

*"Lots of details - question the purpose of some material, does not seem significant"*

Line 31:

Line 31:

**Wiki-Labels** is a [human computation](#) service for Wikipedia. In order perform difficult analyses and train intelligent wiki-tools (e.g. for [detecting vandalism](#) and [assessing the quality of articles](#)), we need [labeled data](#) and lots of it. Wiki-Labels is a tool that makes it easy to collaboratively label wiki artifacts (like revisions) quickly and easily.

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## Campaigns

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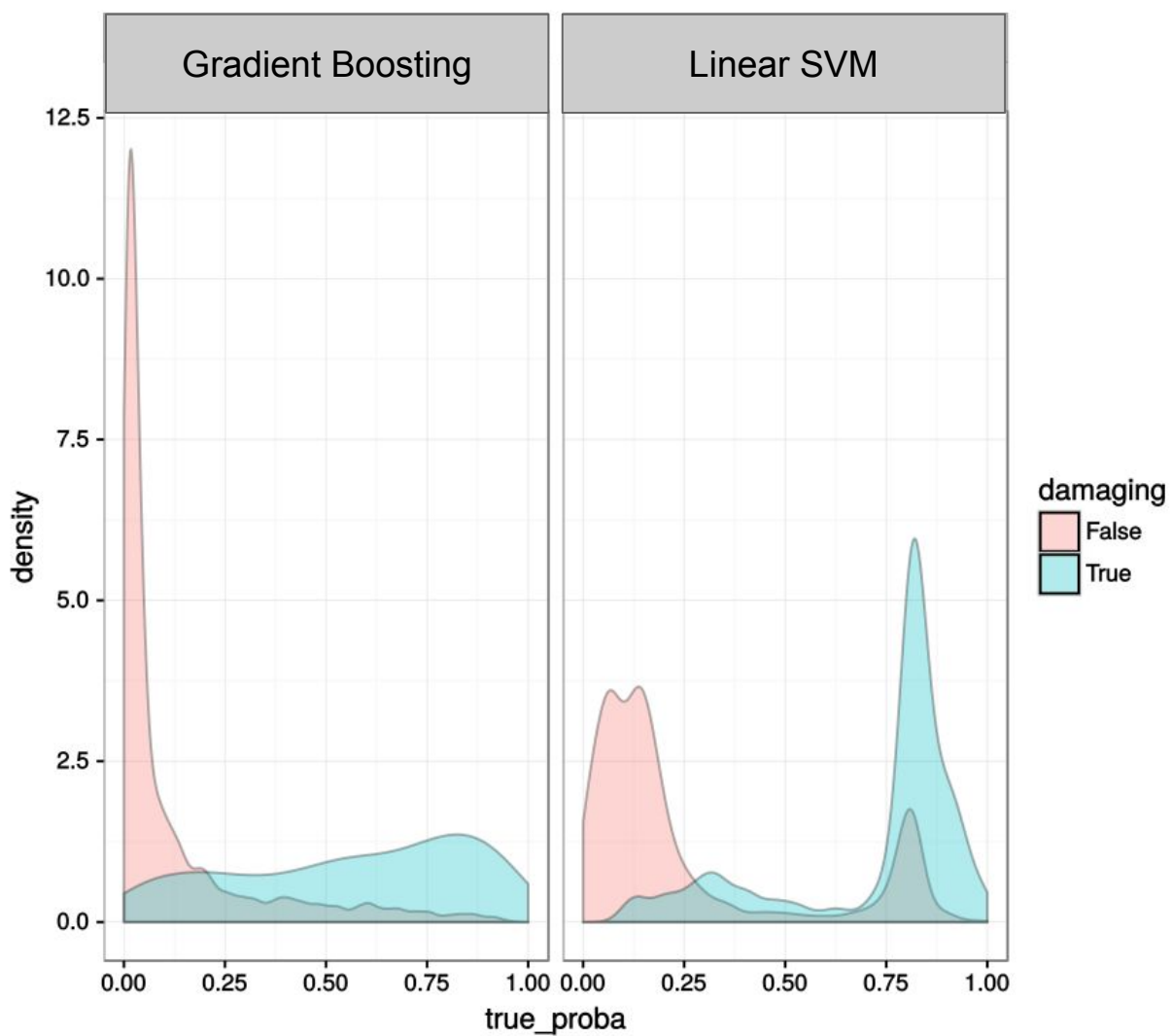
Workset

Damaging? [Yes](#) [No](#) Good faith? [Yes](#) [No](#) [Save](#)

**Thomas S. Hinde**  
Diff for revision [648970723](#)  
*"Lots of details - question the purpose of some material, does not seem significant"*

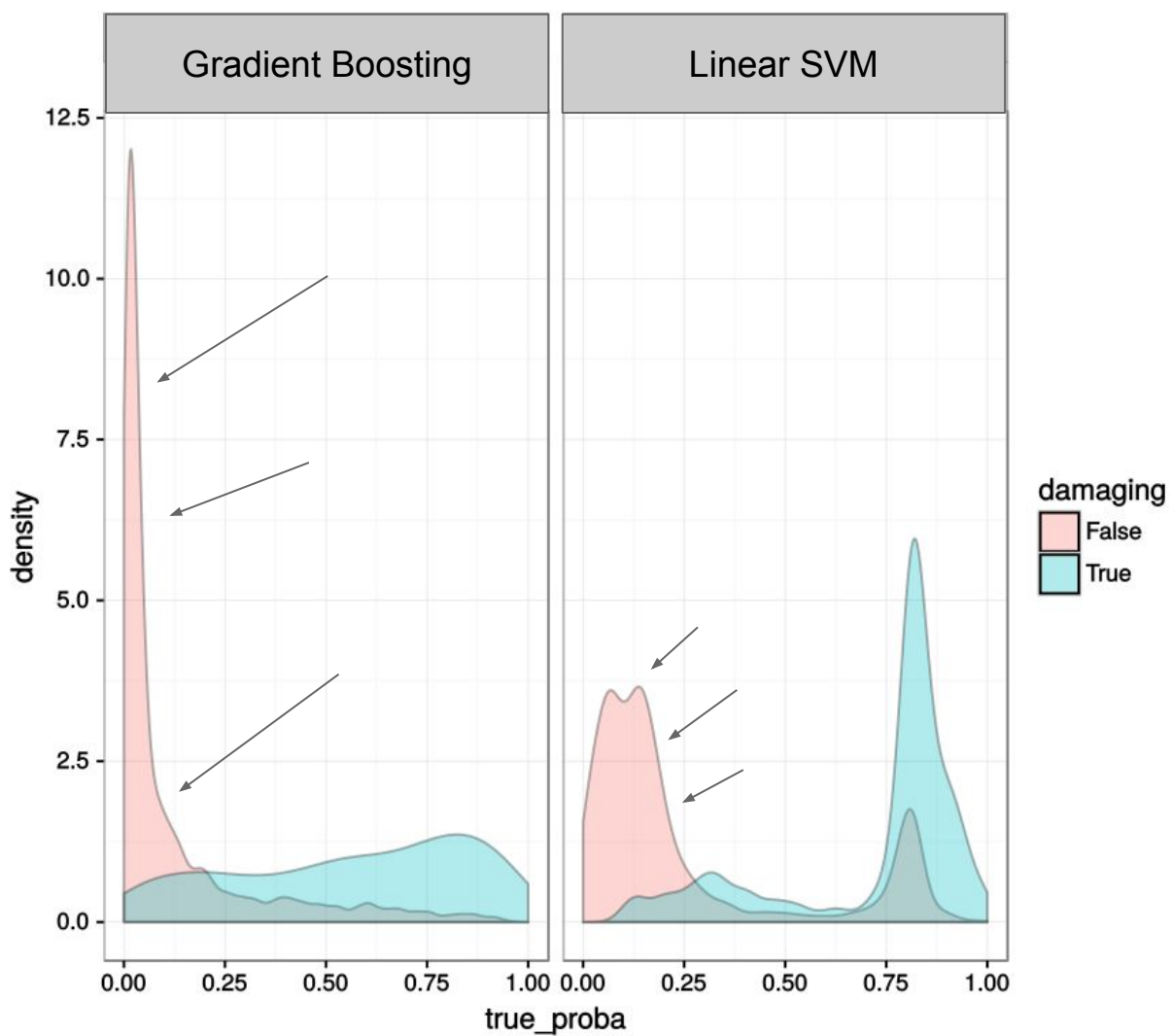
Line 31: Line 31:

# Natural user class

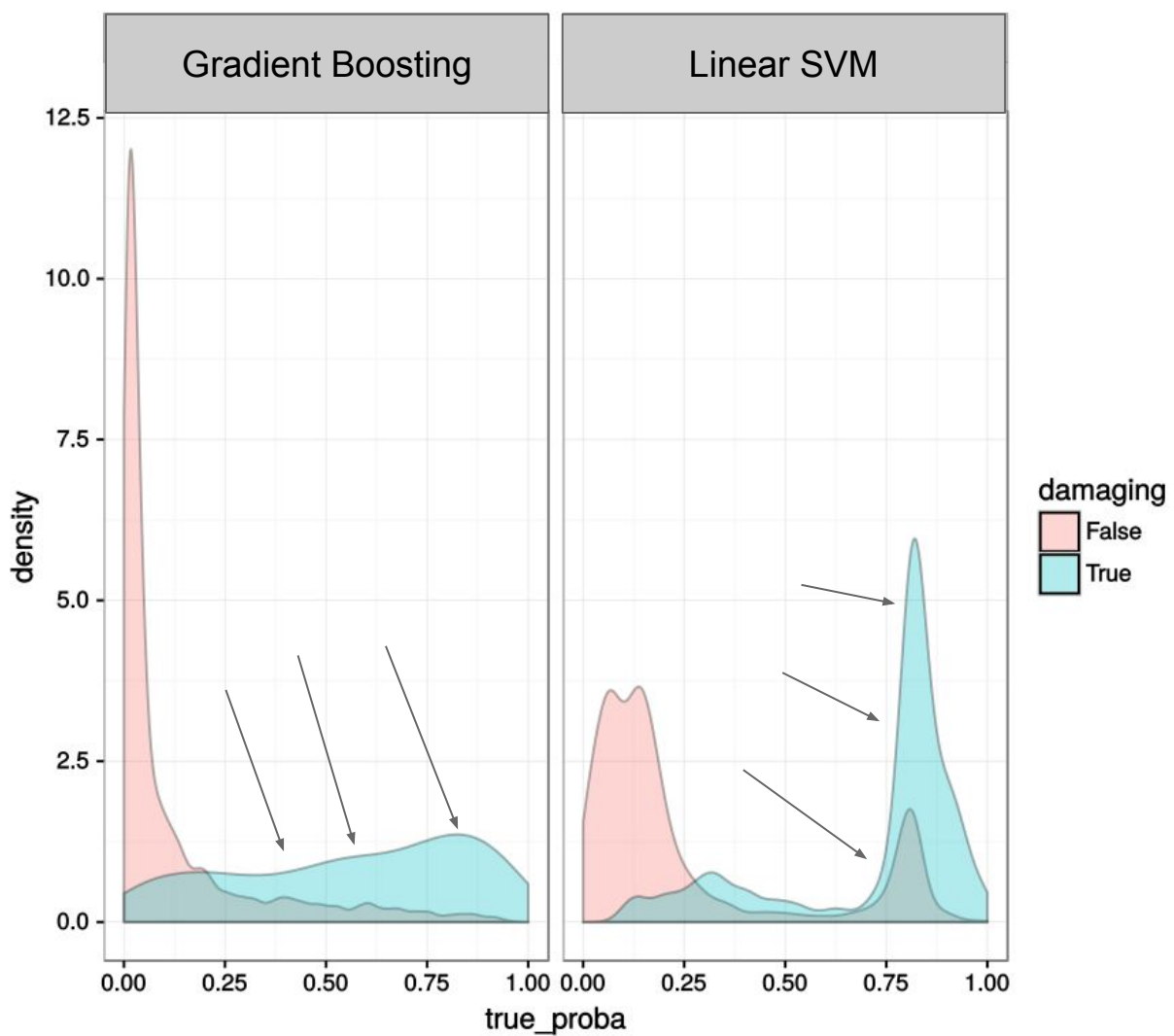




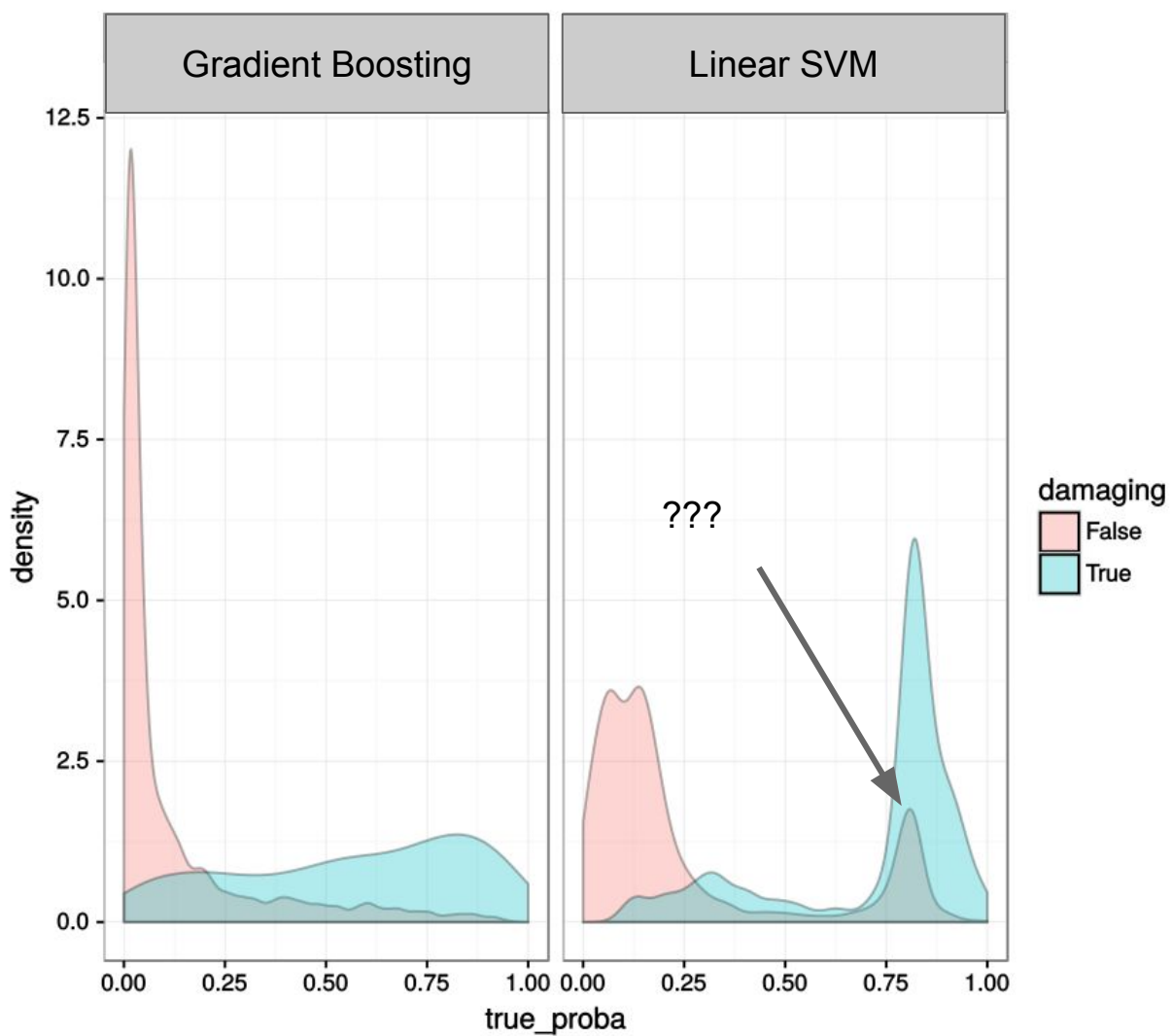
# Natural user class



# Natural user class

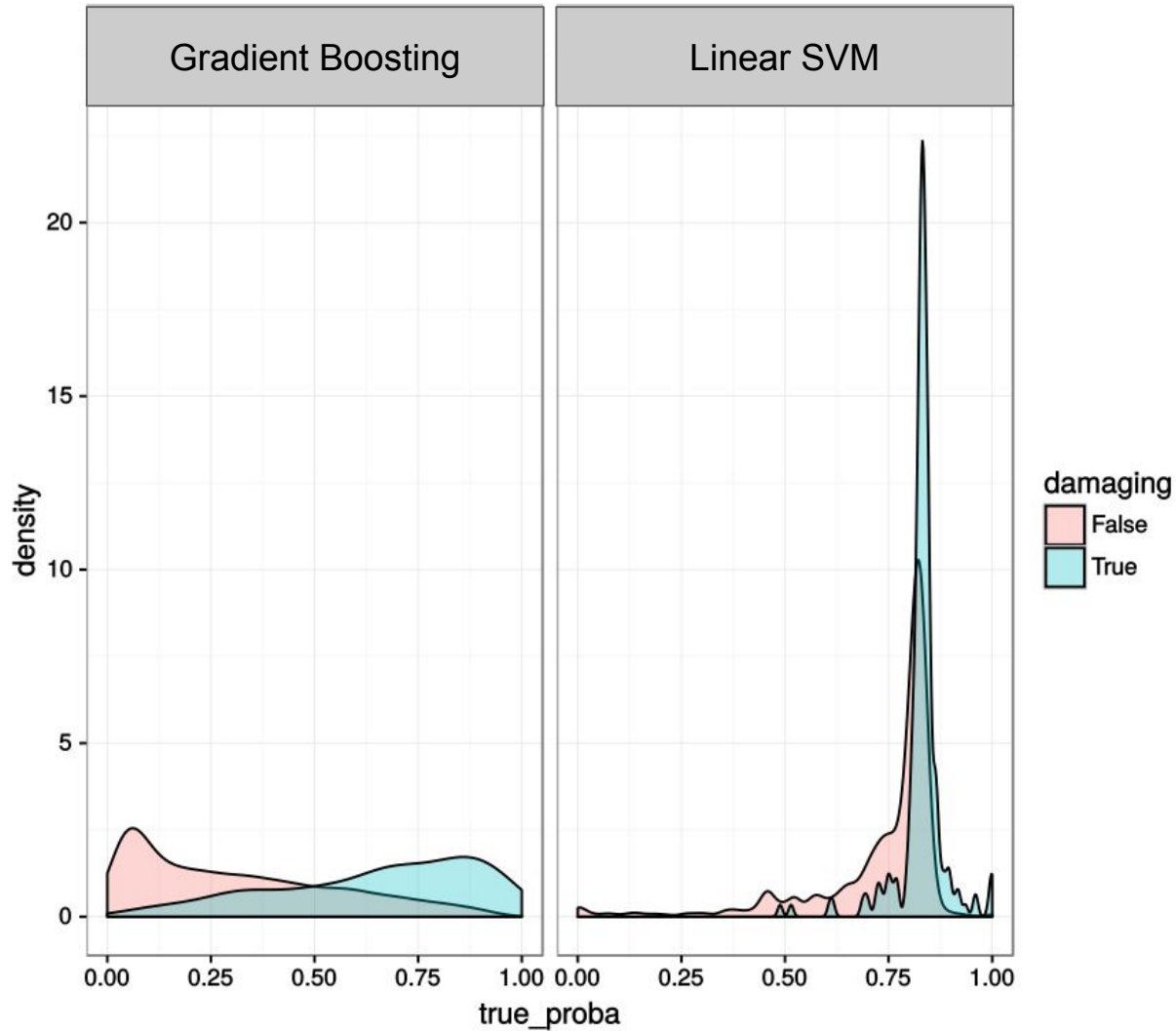


# Natural user class

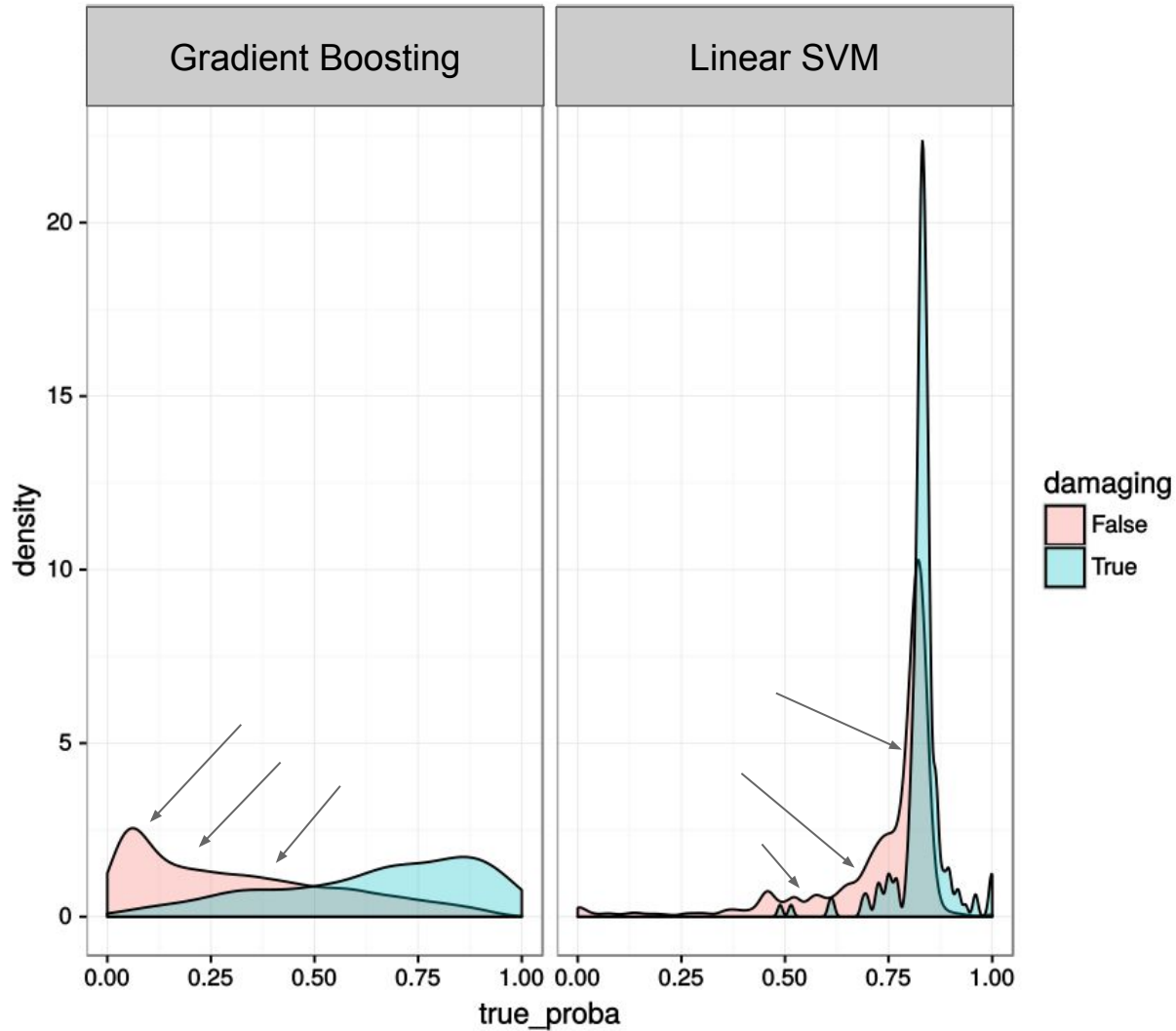


**OK. What if every edit was anon?**

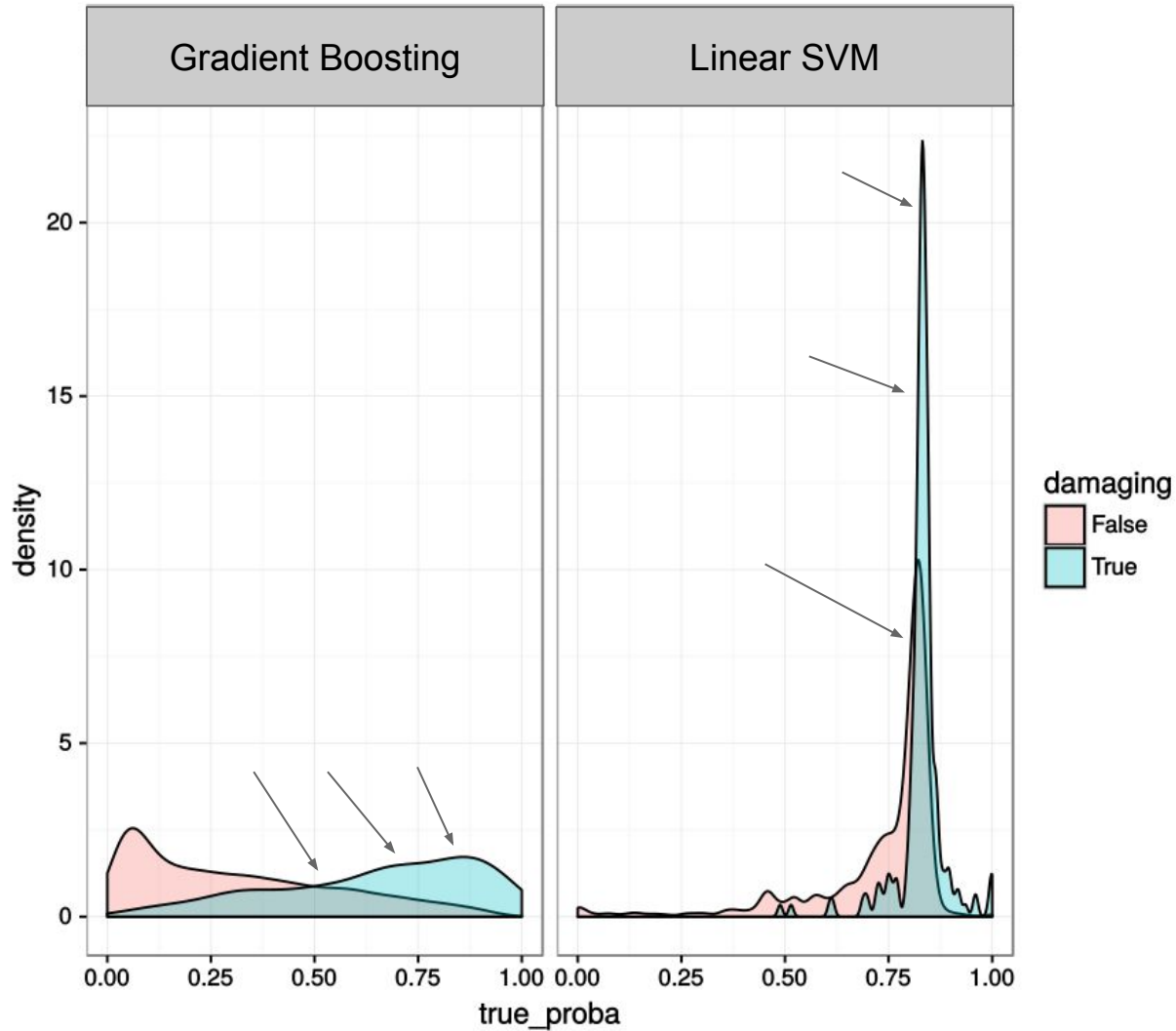
# Anon user class



# Anon user class



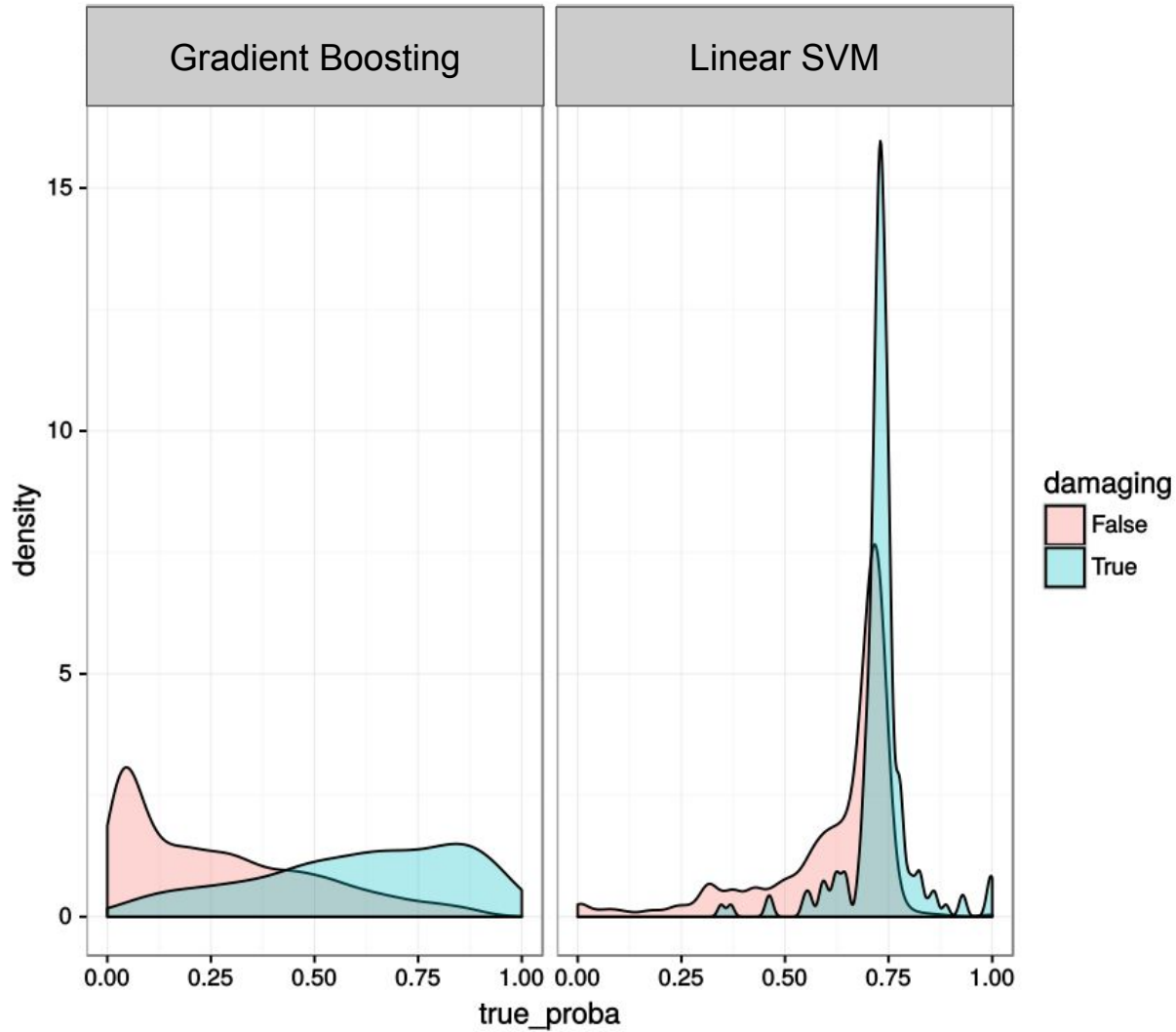
# Anon user class



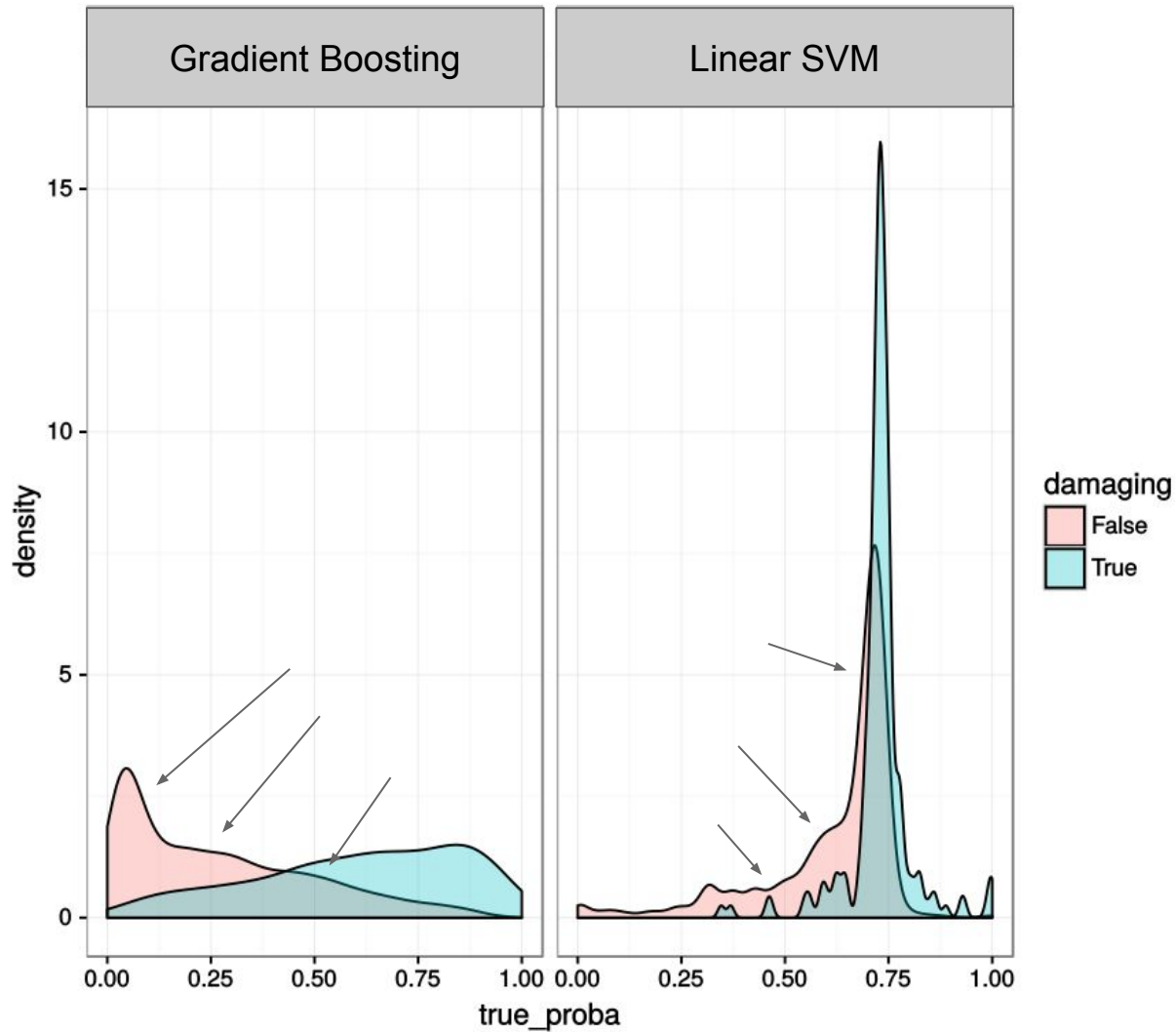
**What if every edit were from a  
newcomer?**



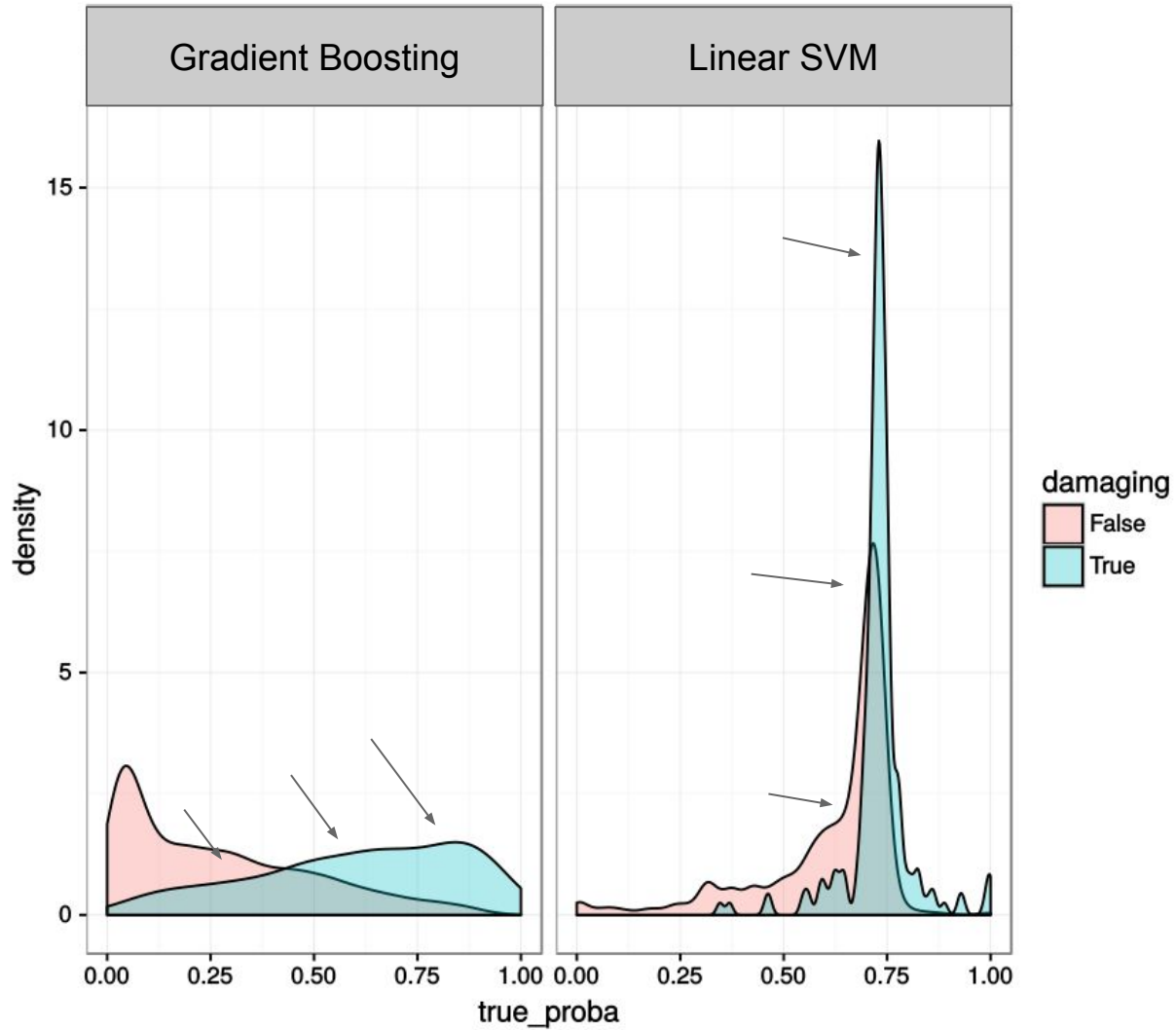
# Newbie user class



# Newbie user class

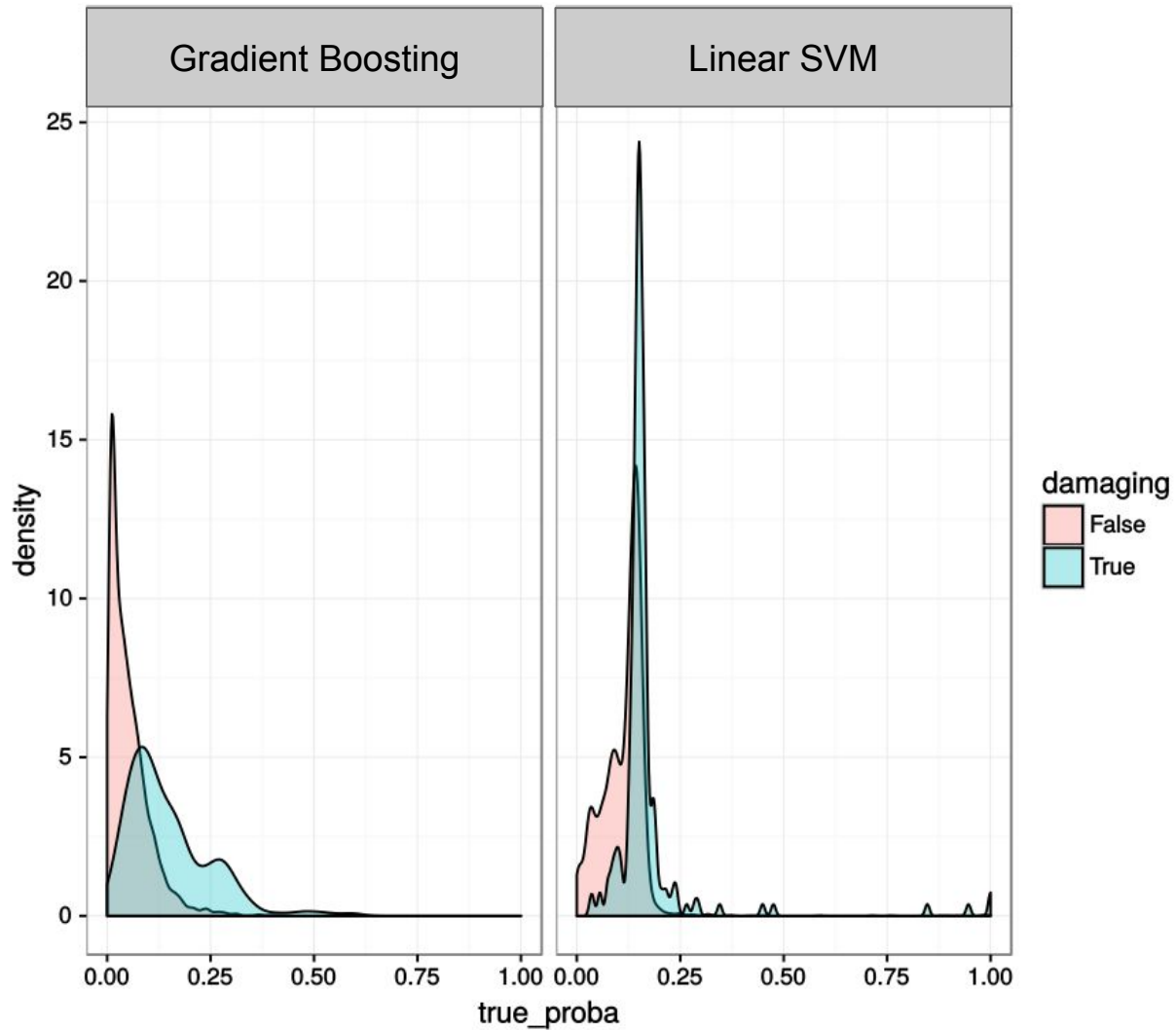


# Newbie user class

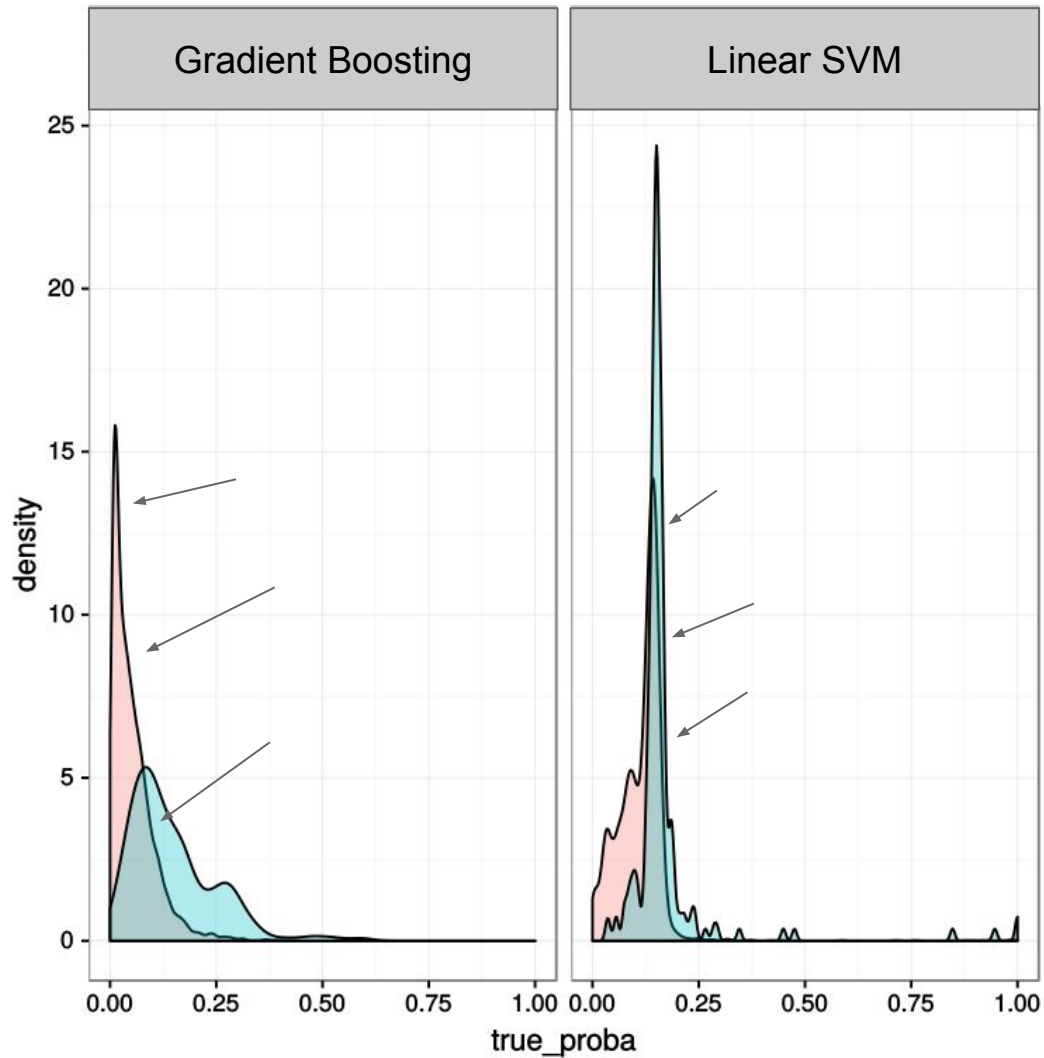


**What if I (EpochFail) saved all the edits?**

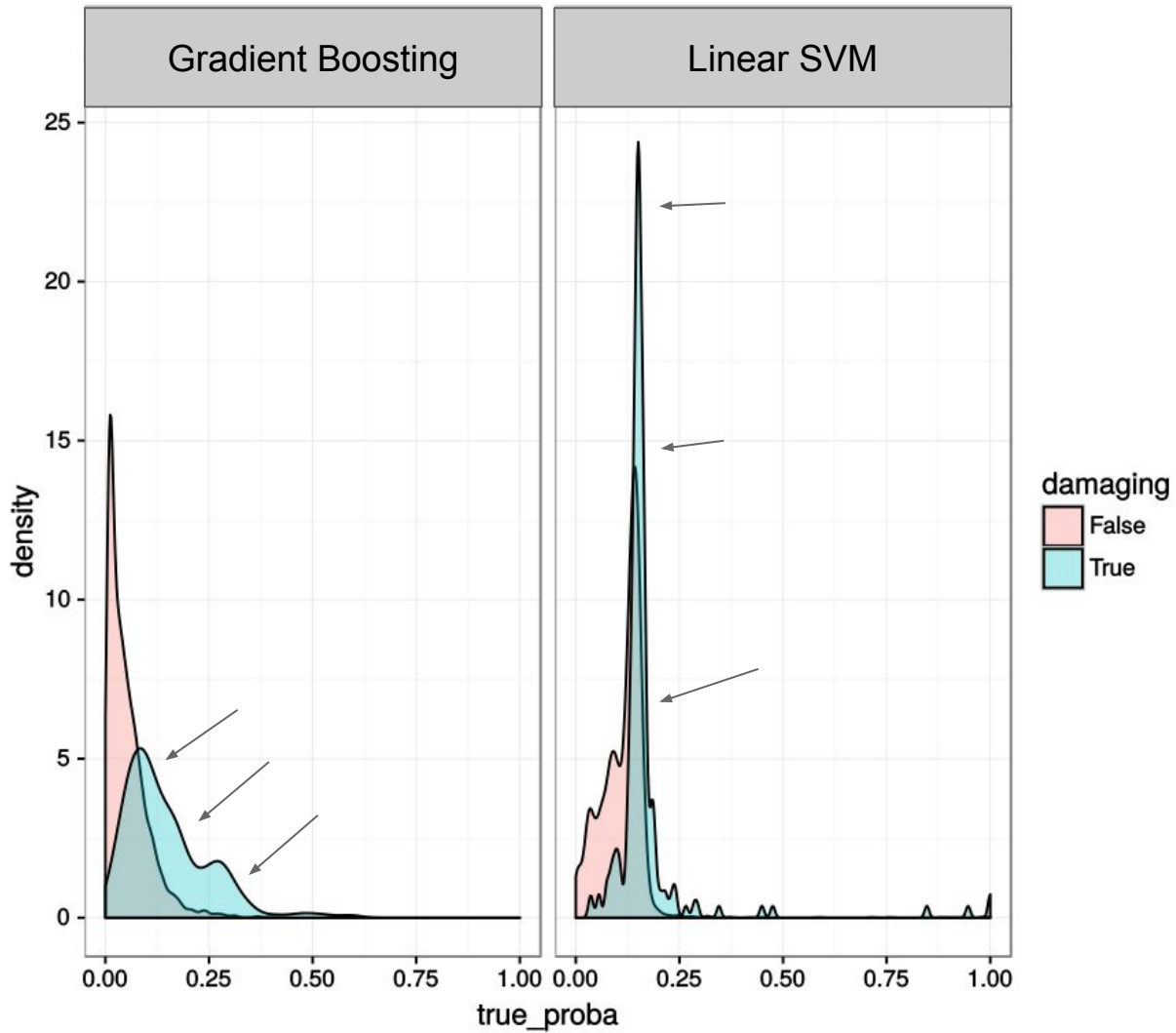
# EpochFail user class



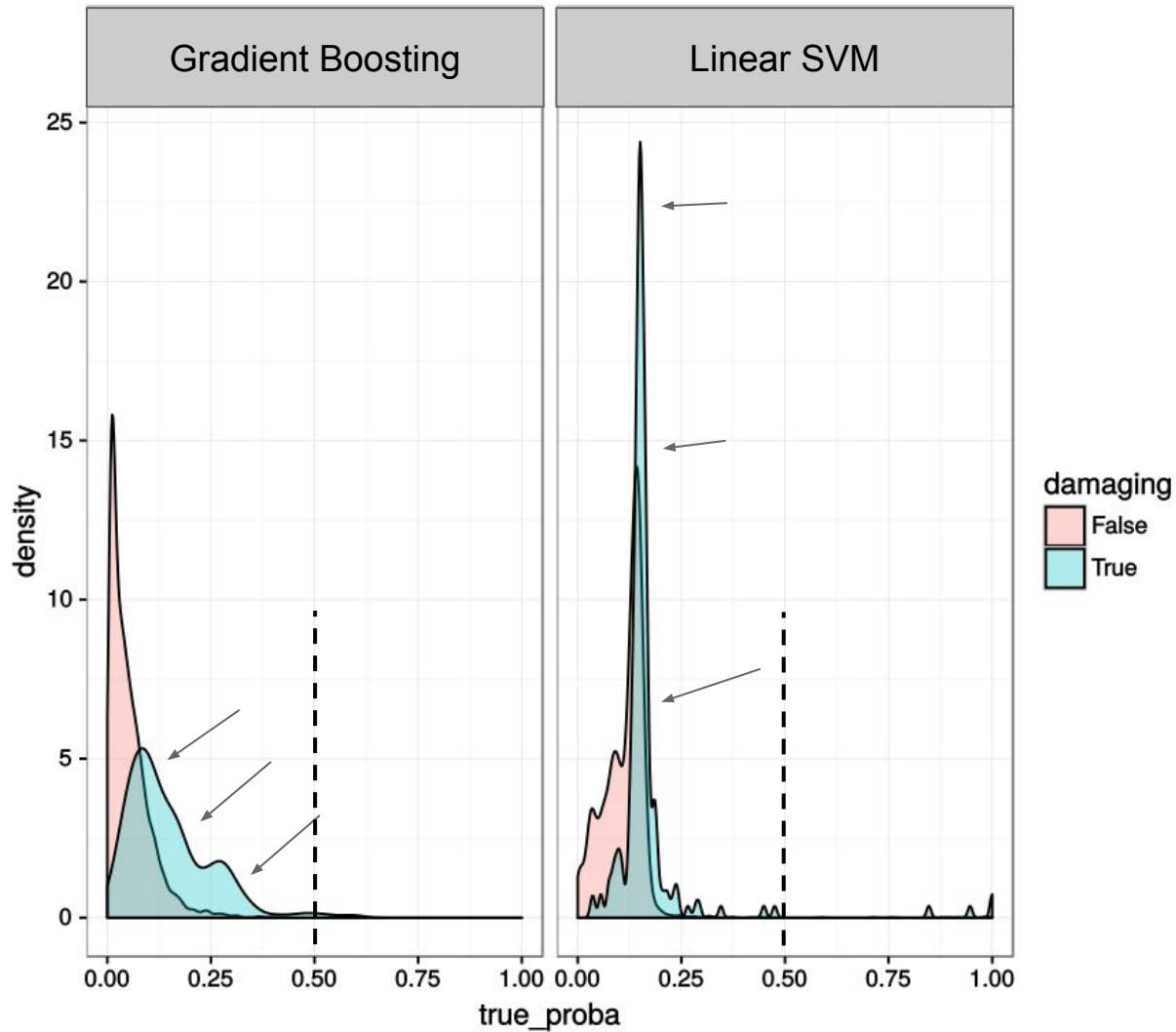
# EpochFail user class



# EpochFail user class



# EpochFail user class





**Mwahahaha!**

**Dec. 2015:**

- Gradient boosting deployed

## **Dec. 2015:**

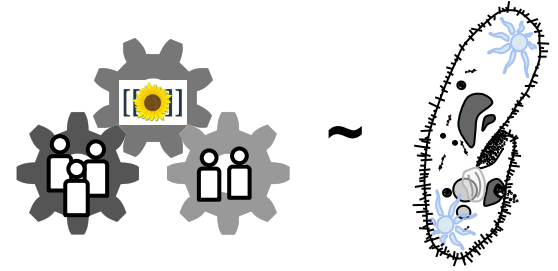
- Gradient boosting deployed

## **Still needs work:**

- Bias against anons/newcomers lessened, but not gone
- New sources of signal
  - HashingVectorization
  - Probabilistic Context-free Grammars

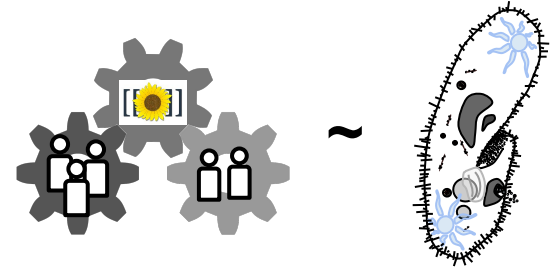
# 1. Wikipedia as a socio-technical system

- Systems-thinking & Biological metaphors



# 1. Wikipedia as a socio-technical system

- Systems-thinking & Biological metaphors



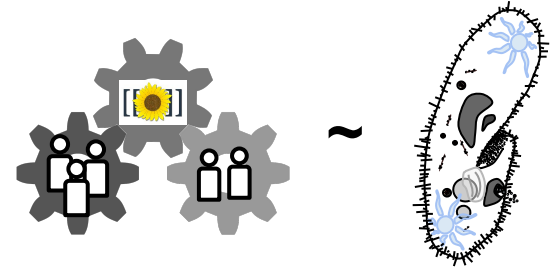
# 2. Critique of algorithmic quality control

- Standpoint epistemology
- Encoding of ideology in technology



# 1. Wikipedia as a socio-technical system

- Systems-thinking & Biological metaphors



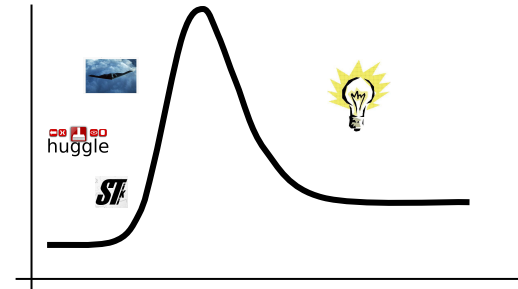
# 2. Critique of algorithmic quality control

- Standpoint epistemology
- Encoding of ideology in technology

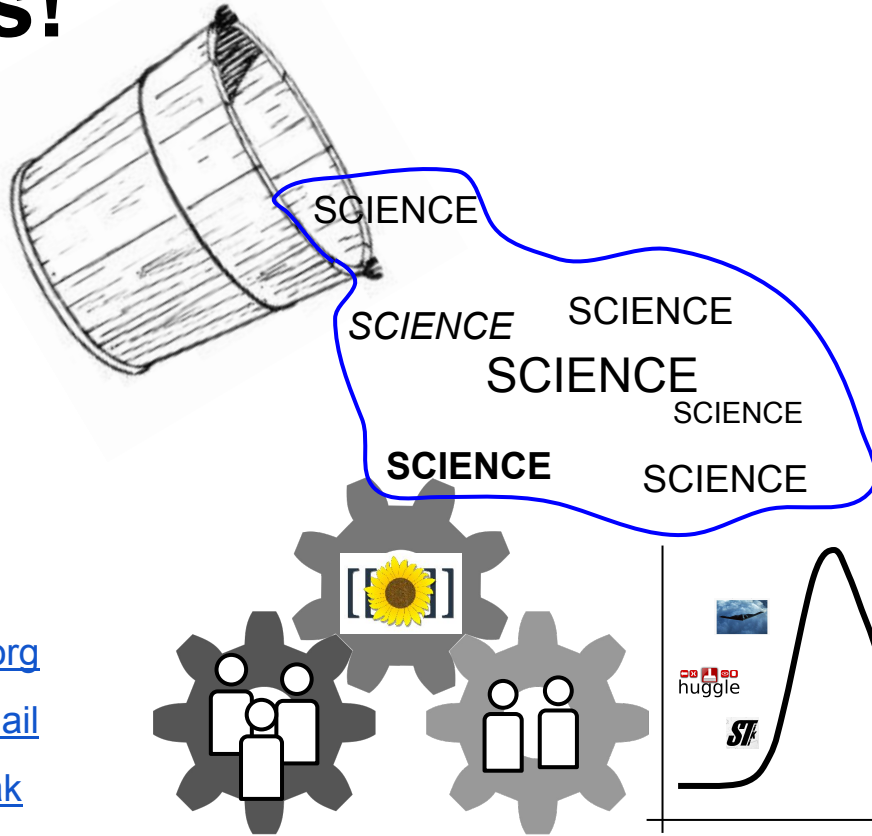


# 3. Infrastructure for socio-technical change

- “progress catalyst”
- Hearing to speech vs. Speaking to be heard
- The dangers of “subjective algorithms”



# Thanks!



## Props to my collaborators

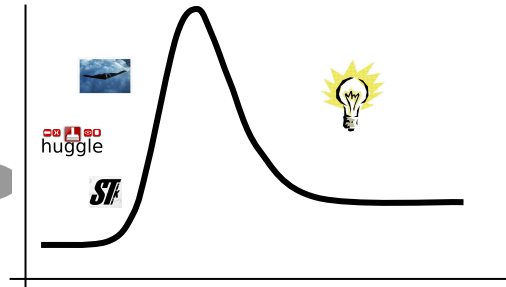
- User:Ladsgroup
- User:Staeiou
- User:He7d3r
- User:とある白い猫
- User:Awight
- User:YuviPanda
- User:Danilo.mac
- User:Jtmorgan
- User:Aetilly
- User:Riedl

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- Communities as living, adaptive systems



- Algorithms in social spaces

- *Empowerment* as technological intervention

- Machine learning support for collaborative work

