

The 6th International Young Naturalists' Tournament

Problem № 2
«All roads lead to Rome»



Team «12FM»
Polina Davydenko

chnmk@mail.ru

The task

Open a random Wikipedia article and click on the first link in the article. Keep clicking on the first link of each following article. It is argued that you will quickly end up on the page *Philosophy*. Investigate whether this is true. How can one describe such an observation?

Hypothesis

The chance of ending up on Philosophy depends on Wikipedia article depth.

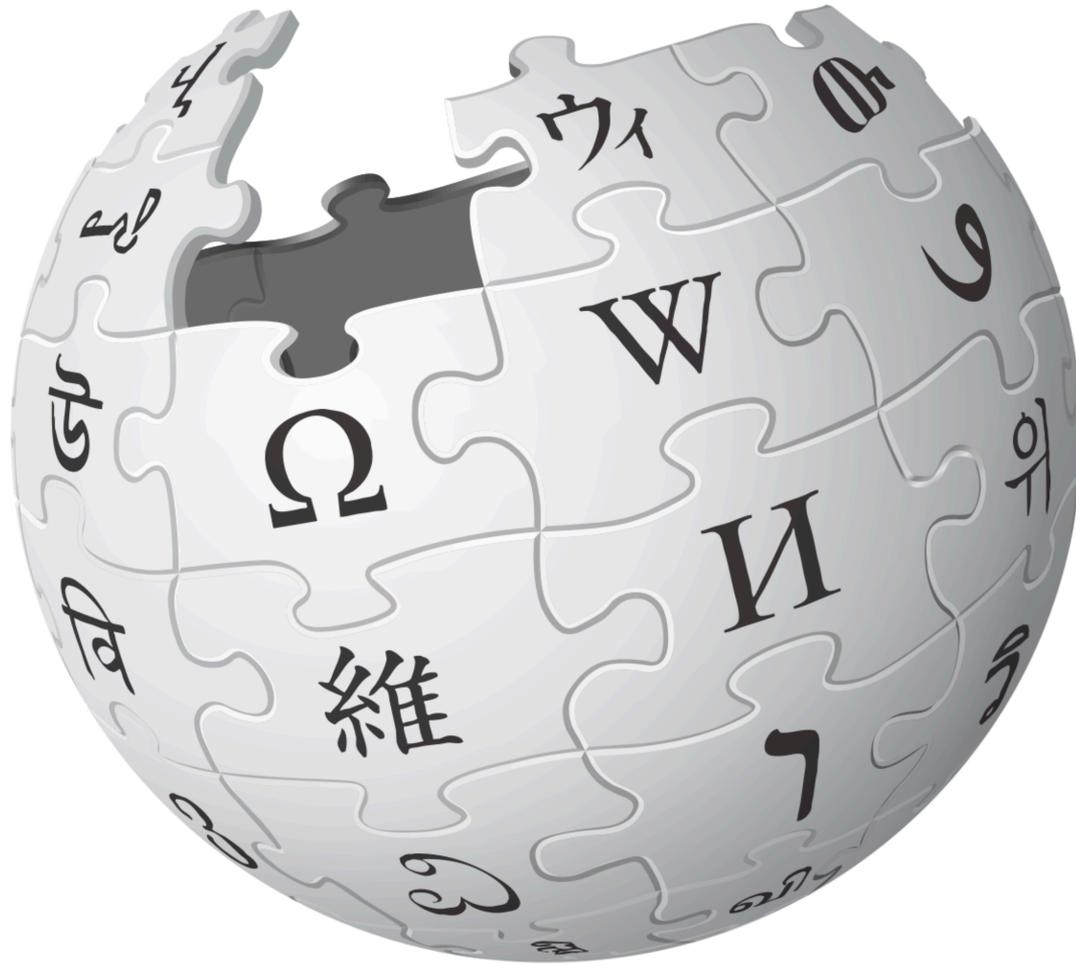
Aim of the study

Determine the probability of getting to Philosophy, and to study this phenomenon.

Objectives

1. Study the literature sources;
2. Formulate hypothesis and aim of the study;
3. Determine the probability of getting to Philosophy from a random Wikipedia article;
4. Determine the average number of pages one needs to end up at Philosophy;
5. Substantiate the conclusions.

Theory



Theory

Article

Talk

Read

Edit

View history

Search Wikipedia



Article Title

Natural science

From Wikipedia, the free encyclopedia

Lead Section

For other uses, see [Natural science \(disambiguation\)](#).

For a topical guide to this subject, see [Outline of natural science](#).

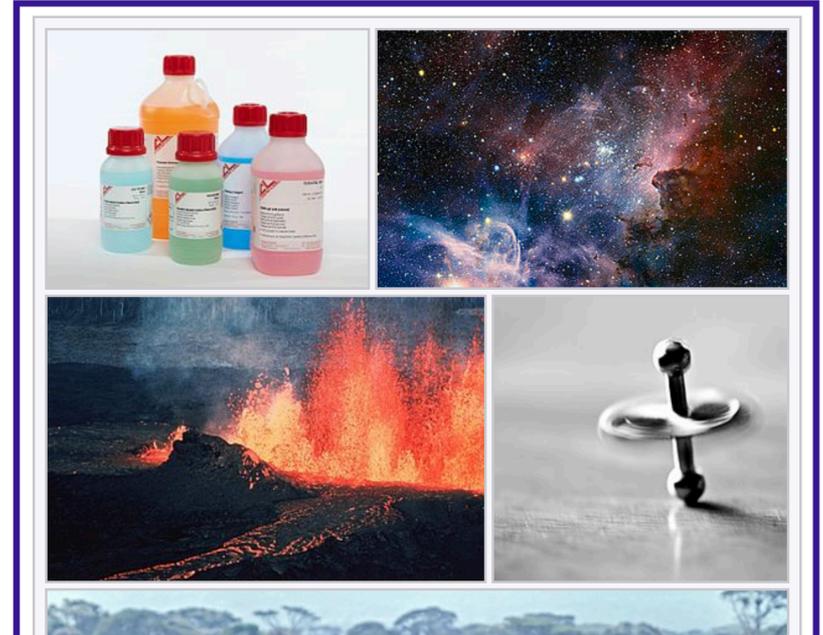
First Link

Infobox

Natural science is a **branch of science** concerned with the description, prediction, and understanding of **natural phenomena**, based on **empirical evidence** from **observation** and **experimentation**. Mechanisms such as **peer review** and repeatability of findings are used to try to ensure the validity of scientific advances.

Article Topic

Natural science can be divided into two main branches: **life science** (or biological science) and **physical science**. Physical science is subdivided into branches, including **physics**, **space science**, **chemistry** and **earth science**. These branches of



Theory

The rules of getting to Philosophy

- Clicking on the first non-parenthesized, non-italicized link
- Ignoring external links, links to the current page, or red links (links to non-existent pages)
- Stopping when reaching Philosophy, a page with no links or a page that does not exist, or when a loop occurs

Theory

The **depth** of Wikipedia is a rough indicator of the encyclopedia's collaborative quality, showing how frequently its articles are updated.

No	Language	Articles	Depth
1	English	5 674 437	907
2	Cebuano	5 382 645	1
3	Swedish	3 781 568	6
4	German	2 195 352	94
5	French	1 997 462	224
6	Dutch	1 935 128	14
7	Russian	1 148 115	134
8	Italian	1 446 454	155
9	Spanish	1 427 373	205
10	Polish	1 287 916	28

Theory

Artikulo [Panaghisgot-hisgot](#)

Bahasa [Usba](#) [Usba ang wikitext](#) [Tan-awa ang kaagi](#)

Pangitaa Wikipedia

Niantic Bay

Title

Tiganos:  41.3101°N 72.18869°V﻿ / ﻿

Gikan sa Wikipedia, ang gawasnong ensiklopedya

„Created by Lsjbot“

Brief information



Paghimo ni bot Lsjbot.

Niantic Bay maoy luuk sa [Estados Unidos](#).^[1] Ang Niantic Bay nahimutang sa kondado sa [New London County](#) ug estado sa [Connecticut](#), sa sidlakang bahin sa nasod, 500 km sa amihanan-sidlakan sa ulohang dakbayan [Washington, D.C.](#)

Ang klima [kasarangan](#). Ang kasarangang giiniton 12 °C. Ang kinainitan nga bulan Agosto, sa 22 °C, ug ang kinabugnawan Marso, sa 2 °C.^[2] Ang kasarangang pag-ulan 1,401 milimetro matag tuig. Ang kinabasaan nga bulan Disyembre, sa 178 milimetro nga ulan, ug ang kinaugahan Oktubre, sa 83 milimetro.^[3]

Infobox

Niantic Bay

Luuk

Nasod  [Estados Unidos](#)
Estado [Connecticut](#)
Kondado [New London County](#)

Tiganos  41.3101°N 72.18869°V﻿ / ﻿

Timezone [EST \(UTC-5\)](#)
- summer (DST) [EDT \(UTC-4\)](#)

GeoNames [4839523](#) 

Ang mga gi basihan niini [[usba](#) | [usba ang wikitext](#)]

- ↑ Niantic Bay sa Geonames.org (cc-by) ; post updated 2006-01-15; database download sa 2017-02-28
- ↑ NASA Earth Observations Data Set Index . NASA.
- ↑ NASA Earth Observations: Rainfall (1 month - TRMM) . NASA/Tropical Rainfall Monitoring Mission.

External links

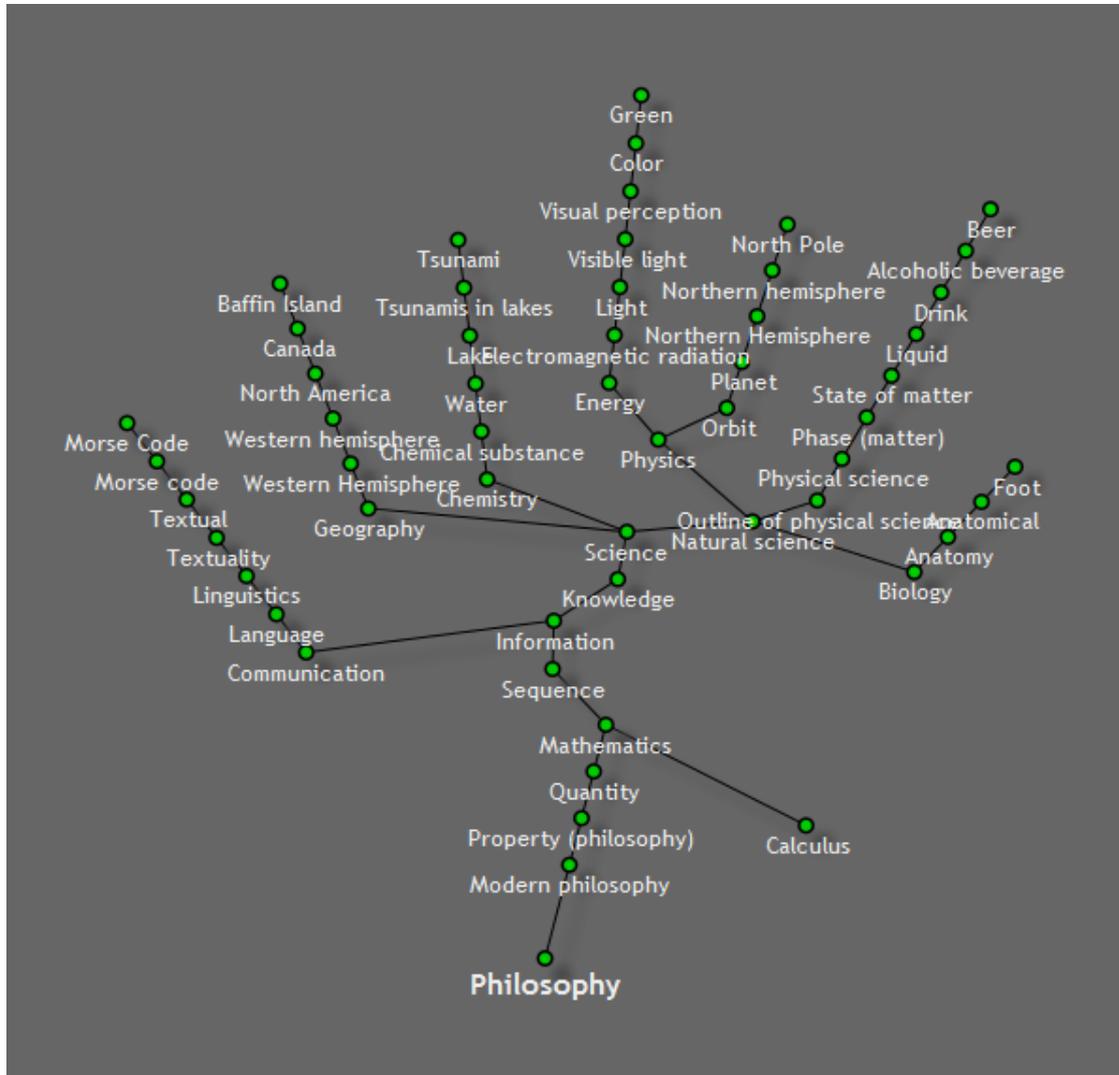
Map



Mga dapit nga gitawag Niantic Bay sa Estados Unidos.

Mga kategoriya: [Estados Unidos paghimo ni bot](#) | [Paghimo ni bot 2017-07](#) | [Geobox usage tracking for other type](#) | [Articles](#), [Luuk](#)

Theory



We have used a special program that visualizes the first link path to Philosophy

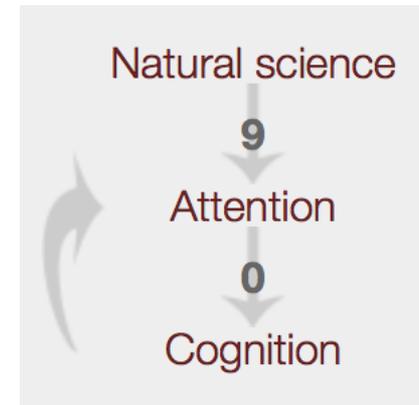
<https://xefer.com/wikipedia>

Experiment 1

Purpose: to define the probability of getting to Philosophy when clicking on the first links in English Wikipedia articles.

Start at **Natural science**

Natural science
Branches of science
Science
Knowledge
Fact
Reality
Object of the mind
Imagination
Mind
Cognition
Attention
Cognition



<http://www.wikiloopr.com/>

Experiment 1

Purpose: to define the probability of getting to Philosophy when clicking on the first links in English Wikipedia articles.

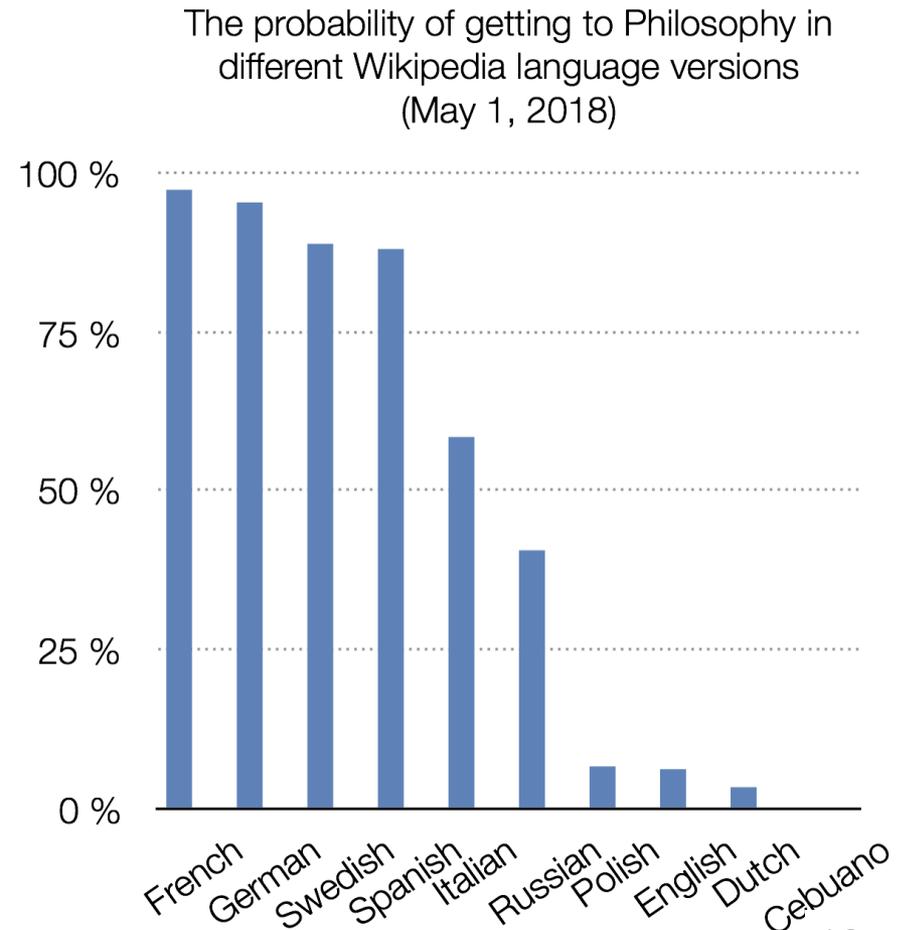
Percent	Cycles (May 2018)
92,4 %	Cognition, Attention
6,4 %	Philosophy, Problem solving, Artificial Intelligence, Intelligence
0,6 %	dead link
0,4 %	Skeletal muscle, Cardiac muscle
0,2 %	red link

Conclusions: the probability of getting to Philosophy is 6,4%. The new edits of pages Cognition and Attention created a loop.

Experiment 2

Purpose: to define the probability of getting to Philosophy when clicking on the first links in Wikipedia articles.

Percent	Wikipedia language version
97,4 %	French
95,4 %	German
89,0 %	Swedish
88,0 %	Spanish
58,6 %	Italian
40,5 %	Russian
6,5 %	Polish
6,4 %	English
3,5 %	Dutch
0,0 %	Cebuano



Experiment 3

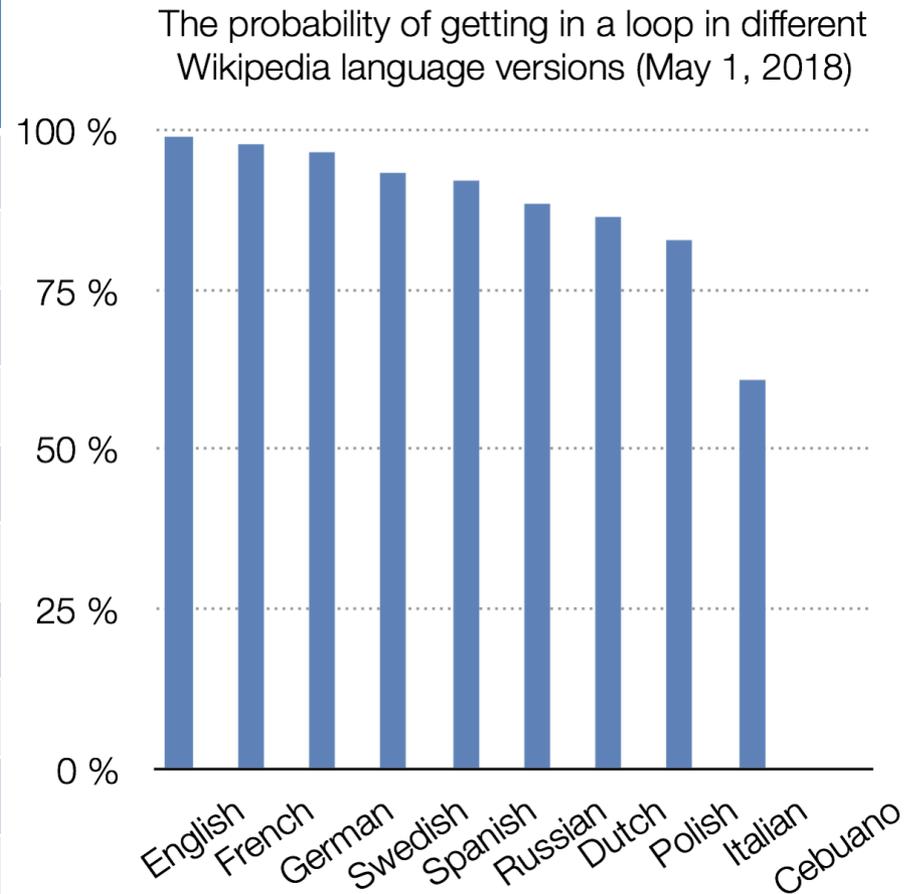
Purpose: to define the probability of getting in a loop when clicking on the first links in Wikipedia articles.

Percent	Cycles (May 2018)
40,5 %	Philosophy, Cognition, Set (mathematics), Mathematics, Science, Objectivity, Object, Category of being, Generalization, Logical connective, Logic
34,5 %	State, Politics, Government agency, Authority
8,1 %	dead link
5,5 %	Society, Human
3,4 %	red link
3,7 %	Human settlement, City
2,4 %	Cinematography, Cinematograph, Auguste and Louis Lumière
1,9 %	Game, Tabletop game

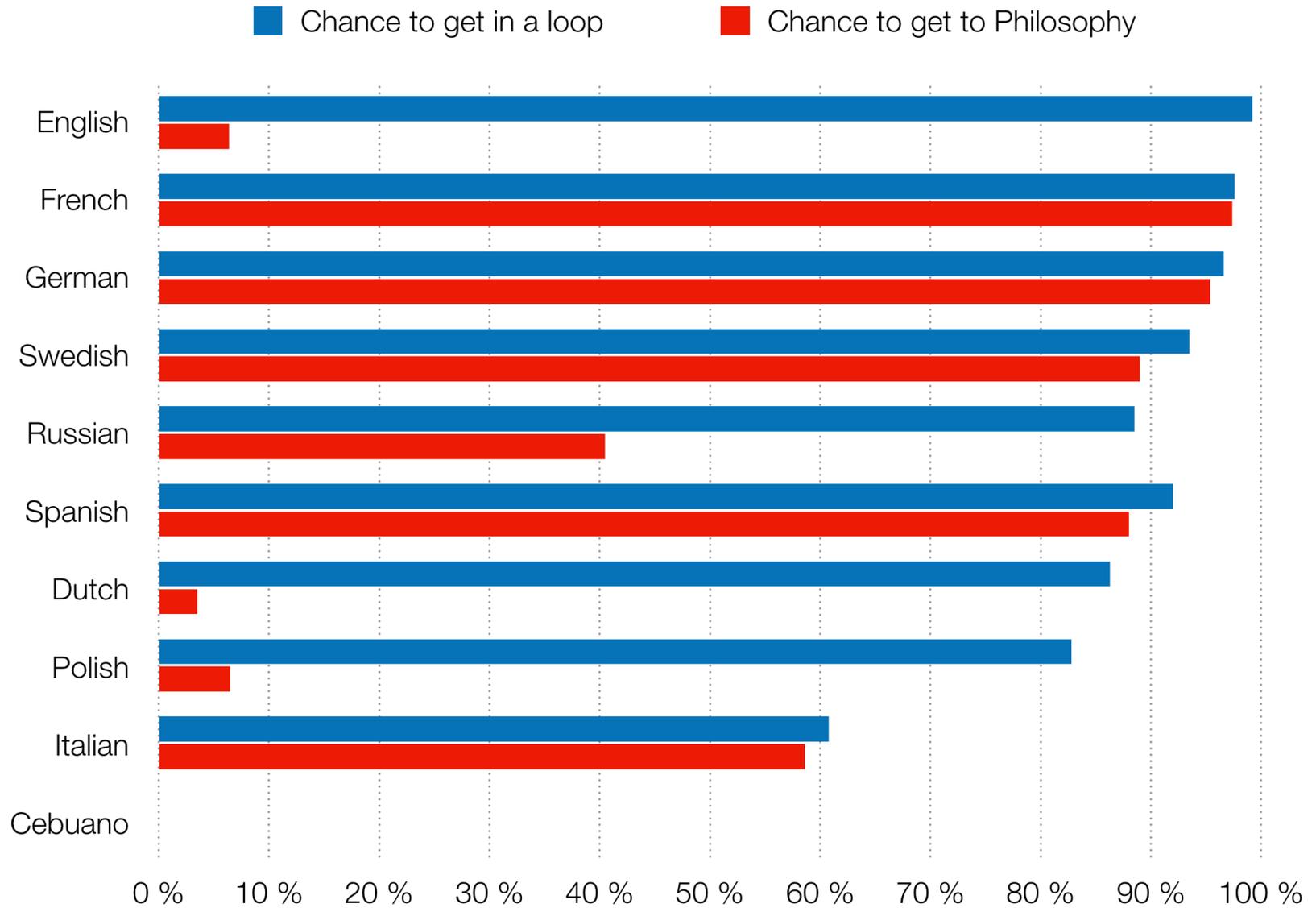
Experiment 3

Purpose: to define the probability of getting in a loop when clicking on the first links in Wikipedia articles.

Percent	Wikipedia language version
99,2 %	English
97,6 %	French
96,6 %	German
93,5 %	Swedish
92,0 %	Spanish
88,5 %	Russian
86,3 %	Dutch
82,8 %	Polish
60,8 %	Italian
0,0 %	Cebuano

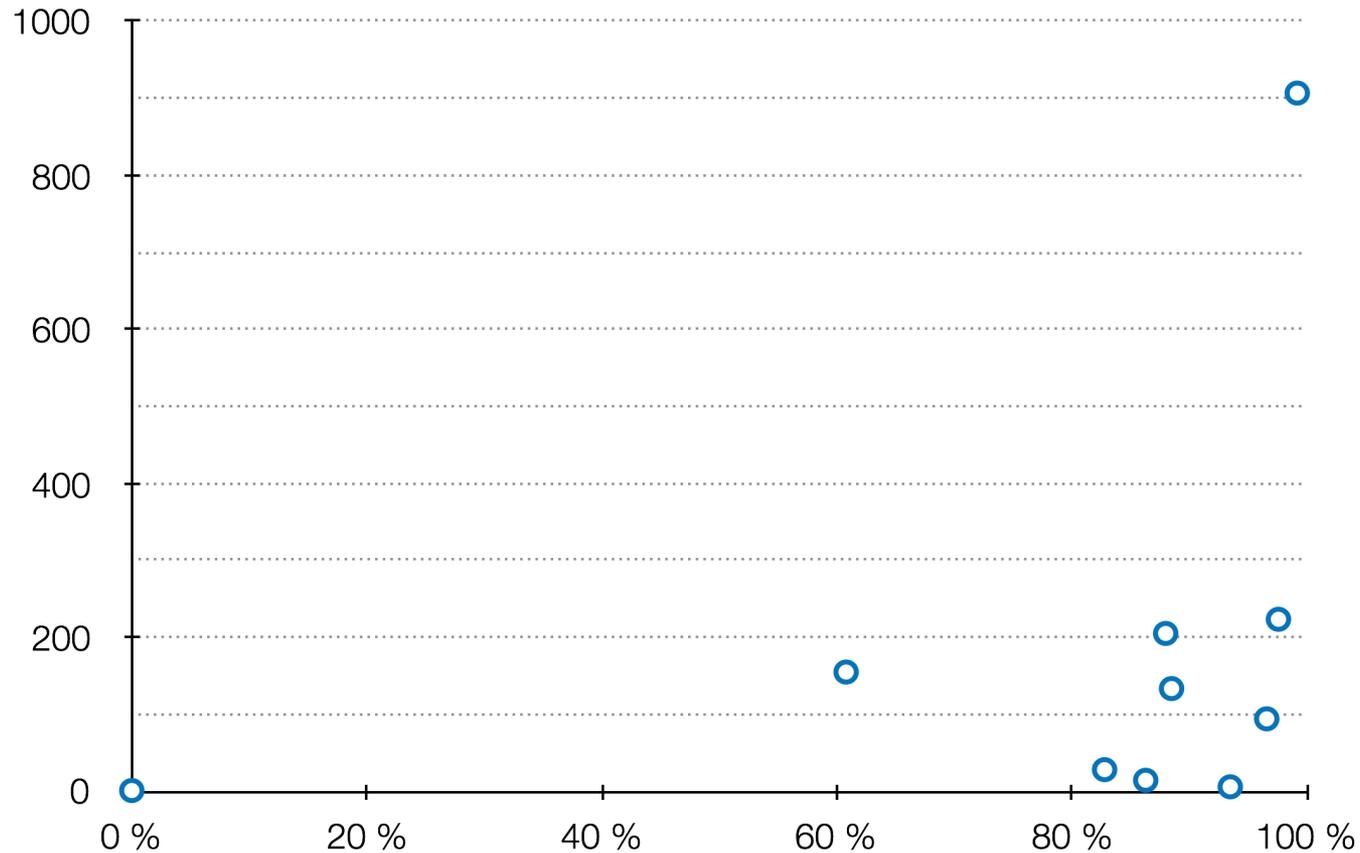


Experiment 3



Experiment 4

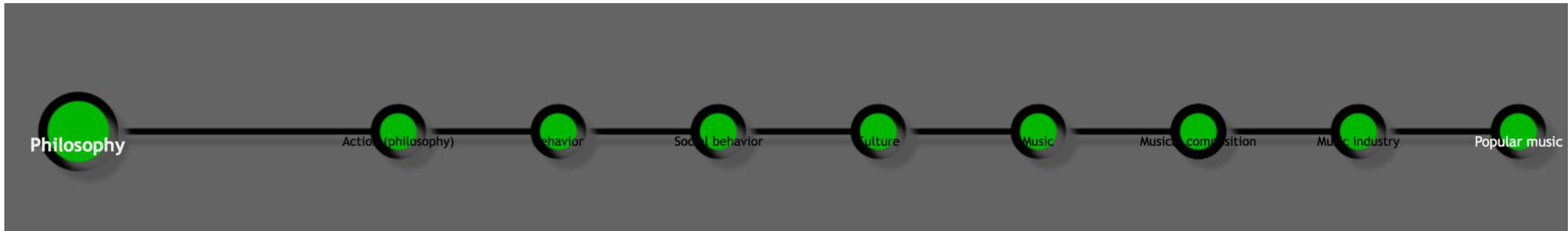
The scatter plot of probability of getting in a loop versus articles' depth



Conclusions: there is no relation between probability of getting in a loop and depth of Wikipedia.

Experiment 5

Purpose: to define the average link chain length to get to Philosophy

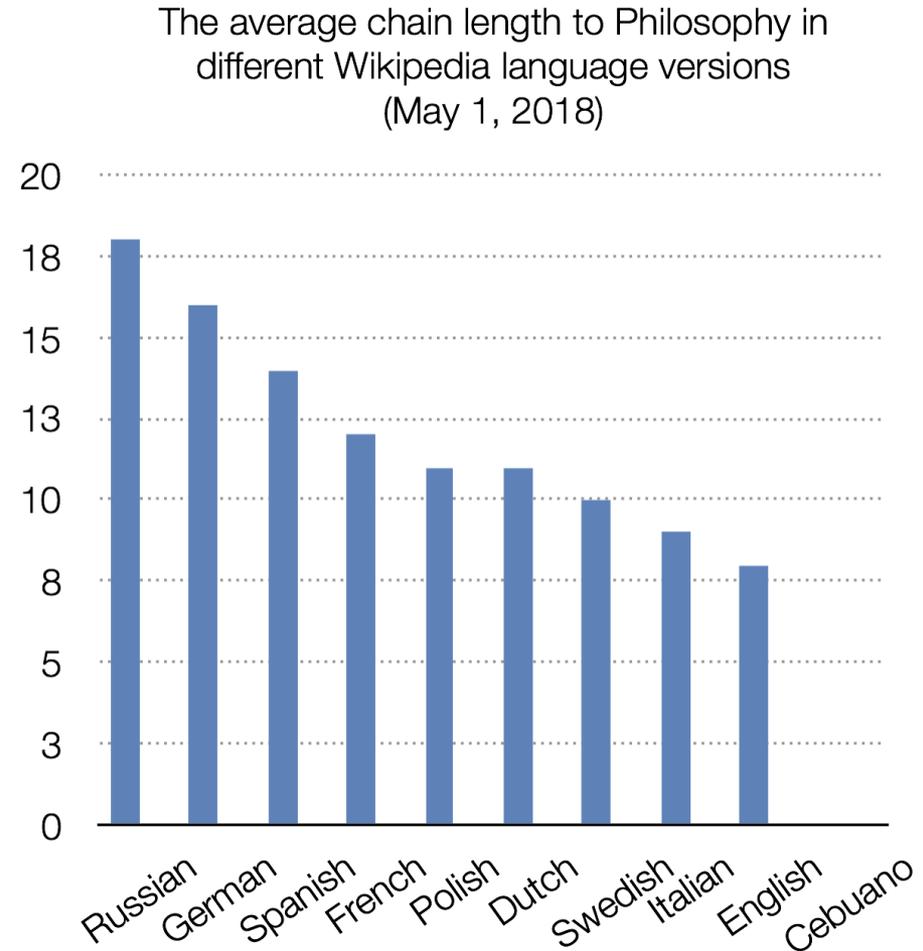


the link chain length from the article Popular music to Philosophy is 7

Experiment 5

Purpose: to define the average link chain length to get to Philosophy.

Percent	Wikipedia language version
18	Russian
16	German
14	Spanish
12	French
11	Polish
11	Dutch
10	Swedish
9	Italian
8	English
-	Cebuano



Experiment 5

The furthest article from Philosophy we have found, 39 pages!

Artikel [Diskussion](#) [Lesen](#) [Bearbeiten](#) [Quelltext bearbeiten](#) [Versionsgeschichte](#)

Wikipedia durchsuchen

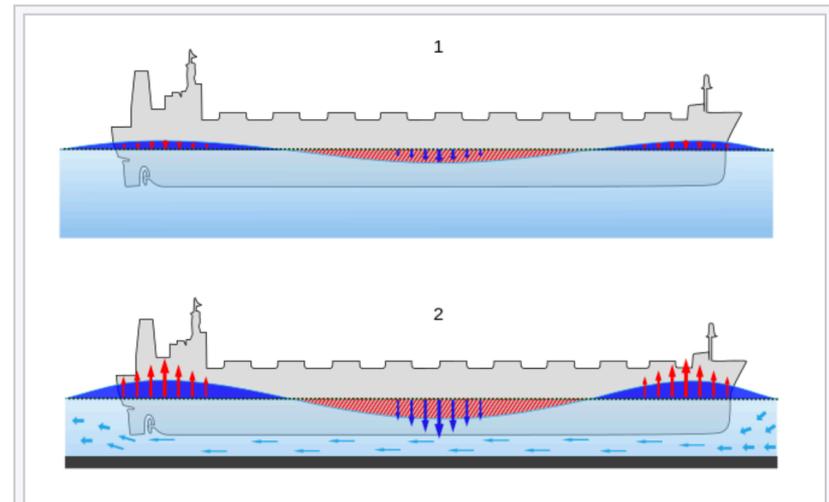


Flachwasserwiderstand

Der Begriff **Flachwasserwiderstand** bezeichnet einen widerstandserhöhenden Effekt auf die Unterströmung beziehungsweise Umströmung von [Schiffen](#) bei der Durchfahrt von tiefen- beziehungsweise seitenmäßig beschränktem Wasser, wie zum Beispiel bei Zufahrten zu Häfen an der Küste und bei vielen Flüssen und Kanälen.

Inhaltsverzeichnis [\[Verbergen\]](#)

- 1 [Definition](#)
 - 1.1 [Flachwassereffekt](#)
 - 1.2 [Versperrungseffekt](#)
- 2 [Siehe auch](#)
- 3 [Weblinks](#)
- 4 [Einzelnachweise](#)
- 5 [Literatur](#)

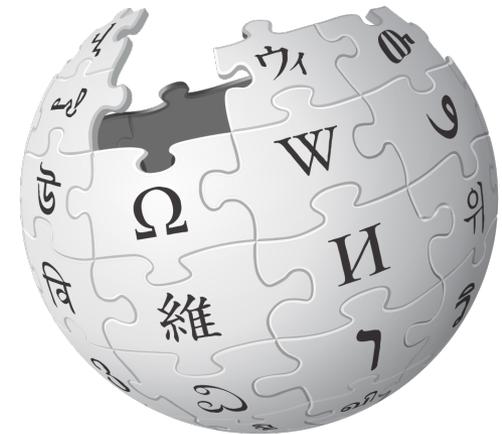


Flachwasserwiderstand in tiefenmäßig beschränktem Wasser



Conclusions

- The highest probability of getting to philosophy (for 1 May, 2018) is in the French Wikipedia: 97,4%; the lowest is in the Dutch Wikipedia: 3,5%;
- The highest probability of getting in a loop (for 1 May, 2018) is in the English Wikipedia: 99,2%; the lowest is in the Italian: 60,8%;
- The average link chain length to Philosophy is 12 articles;
- The furthest link chain length from Philosophy is 39 articles.



WIKIPEDIA
The Free Encyclopedia

References

1. *D. Dimitrov, , P. Singer, F. Lemmerich, and M. Strohmaier. Visual positions of links and clicks on wikipedia. In Proceedings of the 25th International Conference on World Wide Web, 2016*
2. *D. Brezhnev, S. Trusheim, and V. Yendluri. All paths lead to philosophy. Part of the Stanford Network Analysis Project, 2013.*
3. <https://xefer.com/wikipedia>
4. <https://meduza.io/shapito/2016/11/18/vse-puti-vedut-v-filosofiyu>
5. <https://xefer.com/2011/05/wikipedia>
6. <http://www.daniellamprecht.com/wp-content/uploads/2016/08/Evaluating-and-Improving-Navigability-of-Wikipedia-a-Comparative-Study-of-eight-Language-Editions.pdf>
7. https://en.wikipedia.org/wiki/Wikipedia:Getting_to_Philosophy
8. https://en.wikipedia.org/wiki/User:Ilmari_Karonen/First_link
9. https://en.wikipedia.org/wiki/Wikipedia:Manual_of_Style/Lead_section#Opening_paragraph
10. <http://matpalm.com/blog/2011/08/13/wikipedia-philosophy/>

The 6th International Young Naturalists' Tournament

Problem № 2
«All roads lead to Rome»



Team «12FM»
Polina Davydenko

chnmk@mail.ru