

Emotional arcs of stories

Last updated: 2021/10/27, 00:38:45 EDT

Principles of Complex Systems, Vols. 1 & 2
CSYS/MATH 300 and 303, 2021-2022 | @pocsvox

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References

Prof. Peter Sheridan Dodds | @peterdodds

Computational Story Lab | Vermont Complex Systems Center
Vermont Advanced Computing Core | University of Vermont



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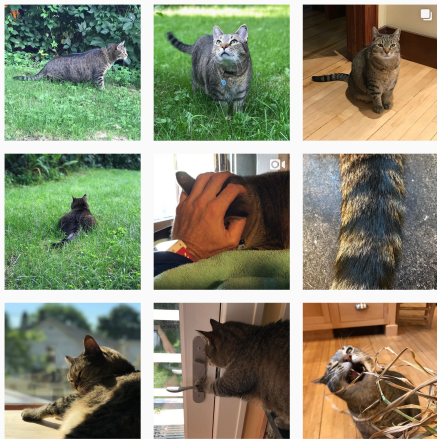
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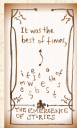


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 On Instagram at [pratchett_the_cat](https://www.instagram.com/pratchett_the_cat) 



Outline

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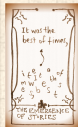
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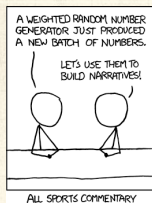
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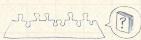


Understanding the Sociotechnocene—Stories:

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xkcd.com/904/

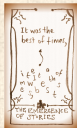



- Goal: a Science of Stories.
- Claim: Homo narrativus —we run on stories.
- “What’s the John Dory?”
- “They’ve lost the plot/thread”
- Claim: The narrative hierarchy and the Scalability of stories.
- Research: Extraction of metaphors, frames, narratives, and stories from large-scale text.
- Research: The taxonomy of human stories.


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1999 Gallup poll: 

 6% of Americans said the lunar landings were fake.

 5% were undecided.

Video replay (disputed):

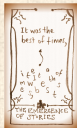
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From the end of the interview:

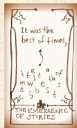
NICOLAS HENIN: No, it was just like in a movie. And, by the way, even the people going to Syria, joining ISIS in Syria to fight, even these people see himself as movie characters. They play their own movie. This is why I think that the most powerful way to fight ISIS are not bombs. It is to kill the narrative. We have to write another movie. We have to build other heroes. And this is why I believe that the French are making big mistakes in the ways they, they fight ISIS.

We created, for instance, accounts on the social media named "Stop Jihadism," and this is [BLEEP], like they did not understand anything. And I did understand why we are so bad. It's just because in France we don't know how to write TV series properly.

[BROOKE LAUGHS]


Just because we have no imagination, we cannot just tell beautiful stories, create beautiful characters, beautiful heroes.

And this is what we have to do because in our world, in our societies what do people want? They want to become heroes. They want to be famous. They want to be, to be recognized.








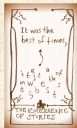
Massive informational misdirection as a cognitive denial of service:



“How the Chinese government fabricates social media posts for strategic distraction, not engaged argument” 

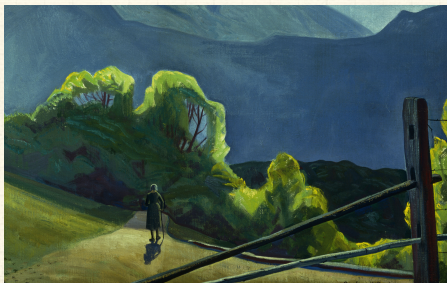
King, Pan, and Roberts,
American Political Science Review, , ,
Forthcoming. ^[6]

-  Make the truth a needle in a haystack
-  Trump's Reality Distortion Field ,
<http://www.onthedia.org> 
-  “Surkov turned Russian politics into a bewildering constantly changing piece of theater. He sponsored all kinds of groups, ...no one was sure what was real or fake. ...it is a strategy of power that keeps any opposition constantly confused.”



The story trap by Philip Ball, 2015-11-12


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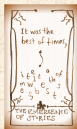
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 “We use neat stories to explain everything from sports matches to symphonies. Is it time to leave the nursery of the mind?”

 “...we might wonder if the ultimate intelligibility of the universe will be determined not so much by the capacity of our minds to formulate the appropriate concepts and equations, but by whether we can find a meaningful story to tell about it.”



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Kurt Vonnegut on the Shapes of Stories ↗



Ron Swanson on metaphors:

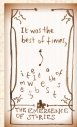
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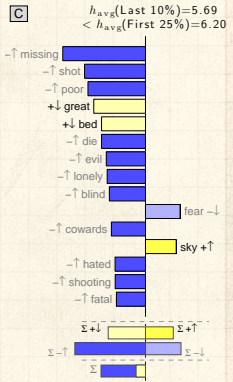
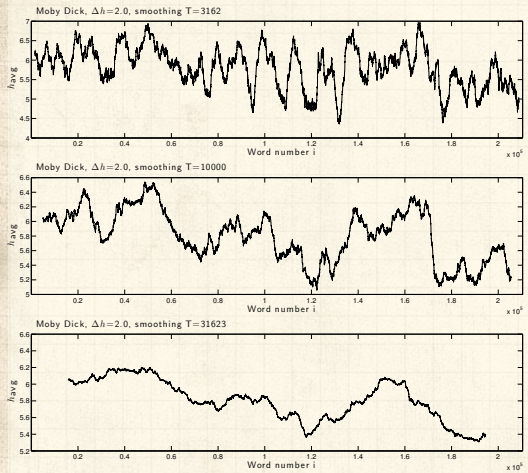
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🧱 "I hate metaphors. That's why my favorite book is Moby Dick. No frou-frou symbolism. Just a good, simple tale about a man who hates an animal."



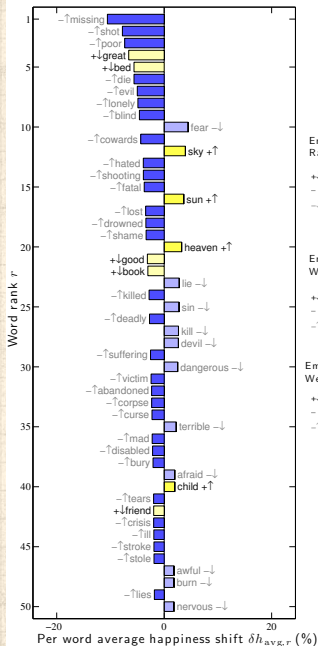
The emotional shapes of stories—Moby Dick:



- Stories
- Next
- References



T_{ret} : First quarter of Moby Dick ($h_{\text{avg}}=6.20$, happier)
 T_{comp} : Last 10% of Moby Dick ($h_{\text{avg}}=5.69$, sadder)



Word balance:
Raw counts



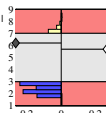
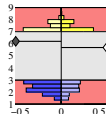
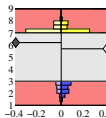
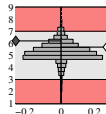
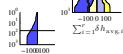
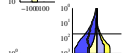
Emotion balance:
Raw counts



Emotion balance:
Weighted



Emotion balance:
Weighted differential



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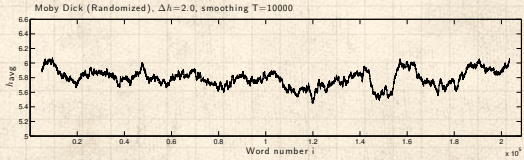
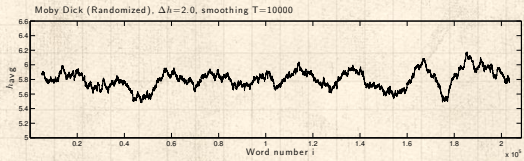
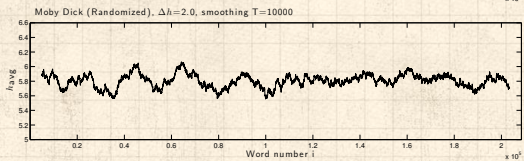
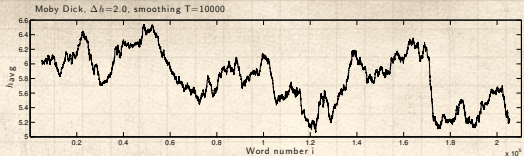
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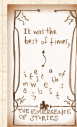
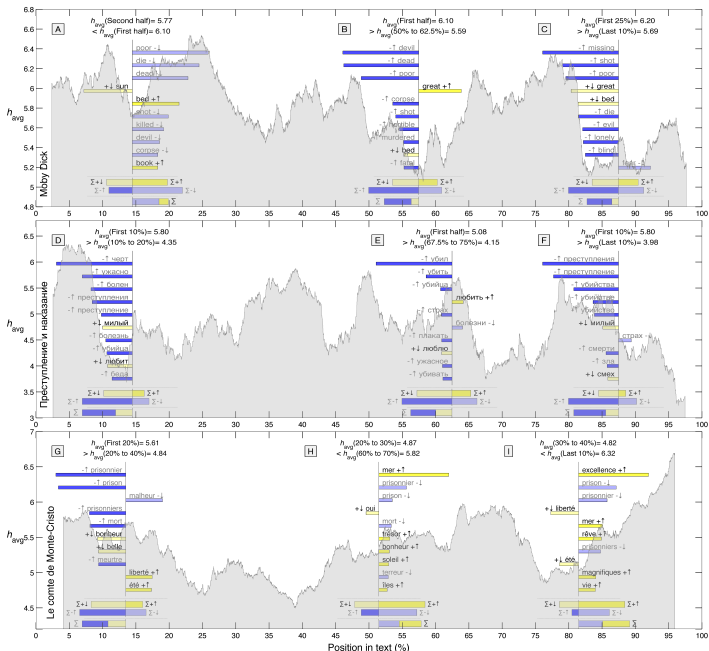
Comparison of the emotional trajectory of Moby Dick with the results for three example randomized



Stories

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References



Online, interactive Emotional Shapes of Stories for 10,000+ books:

Frankenstein; Or the Modern Prometheus [\(wiki\)](#)

by Mary Shelley

Search Gutenberg Corpus

by Title ▾

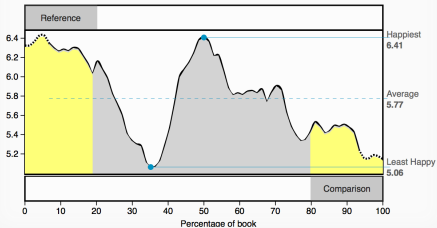
Classics ▾

Harry Potter ▾

Random

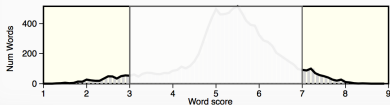
Book happiness time series:

Explore the work's emotional dynamics by sliding and resizing the reference and comparison sections.



Lens (for advanced users):

Slide and resize the stop-window to change the lens:

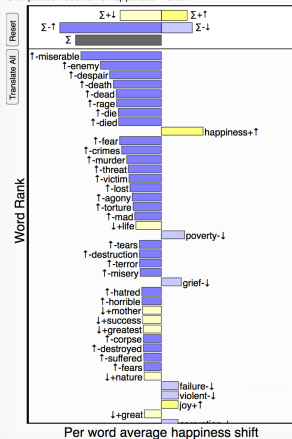


Word Shift:

Why comparison section is less happy than the reference one

Reference sections's happiness = 6.31

Comparison section's happiness = 5.35



Online, interactive Emotional Shapes of Stories for 10,000+ books:

Harry Potter (all books together)

by J.K. Rowling

Search Gutenberg Corpus

by Title ▾

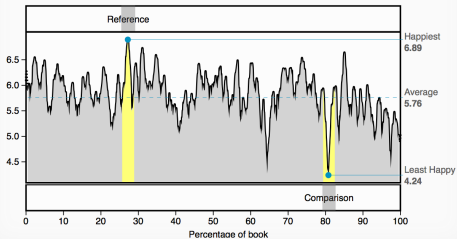
Classics ▾

Harry Potter ▾

Random

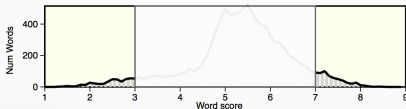
Book happiness time series:

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Lens (for advanced users):

Slide and resize the stop-window to change the lens:

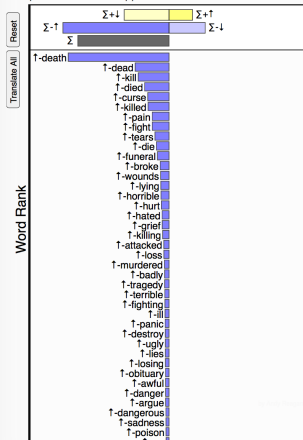


Word Shift:

Why comparison section is less happy than the reference one

Reference section's happiness = 6.13

Comparison section's happiness = 5.14



Online, interactive Emotional Shapes of Stories for 1,000+ movie scripts:

Pulp Fiction

directed by Quentin Tarantino

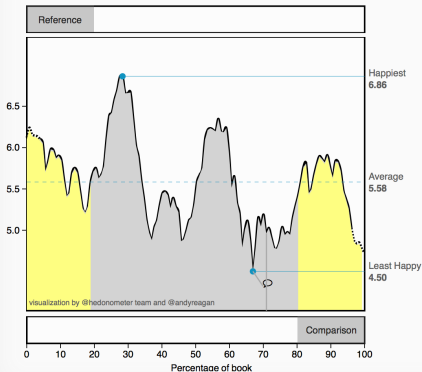
Classics ▾

Team Picks ▾

Random

Movie happiness time series:

Explore the work's emotional dynamics by sliding and resizing the reference and comparison sections.



Movie script:

Portion of script scored for each point in timeseries.

Zed takes the chair, sits it in front of the two prisoners, then lowers into it. Maynard hands The Gimp's leash to Zed, then backs away.

MAYNARD
(to The Gimp)
Down!

The Gimp gets on its knees.

Maynard hangs back while Zed appraises the two men.

MAYNARD
Who's first?

ZED
I ain't fer sure yet.

Then with his little finger, Zed does a silent "Eenie, meeny, miney, moe..." just his mouth mouthing the words and his finger going back and forth between the two.

Butch and Marsellus are terrified.

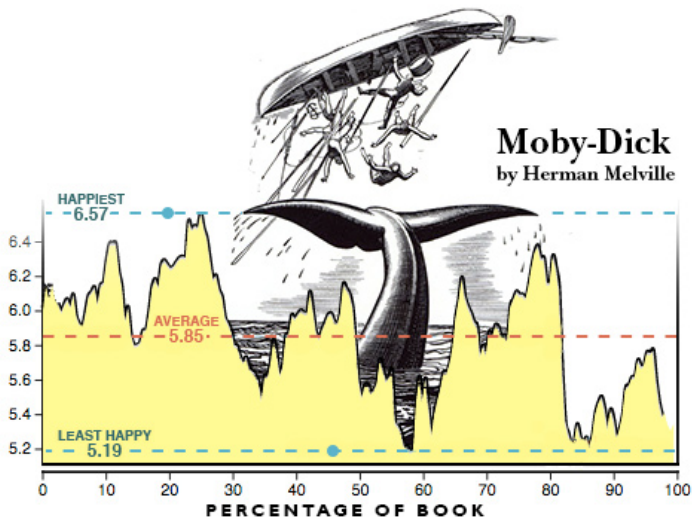
Maynard looks back and forth at the victims.

The Gimp's eyes go from one to the other inside the mask.

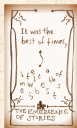
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Moby-Dick illustration by Rockwell Kent, 1930

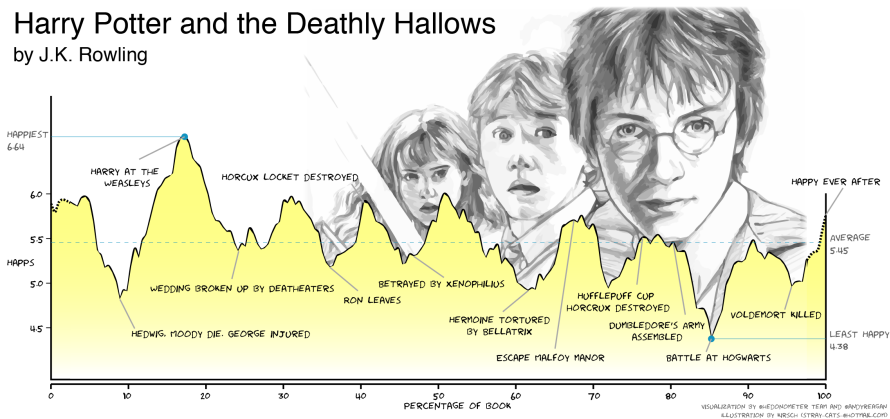


<http://whyfiles.org/2015/in-10-languages-happy-words-beat-sad-ones/>



Harry Potter and the Deathly Hallows

by J.K. Rowling



"The emotional arcs of stories are dominated by six basic shapes" ↗

Reagan, Mitchell, Danforth, and Dodds.

EPJ Data Science, 5, 31, 2016. [7]



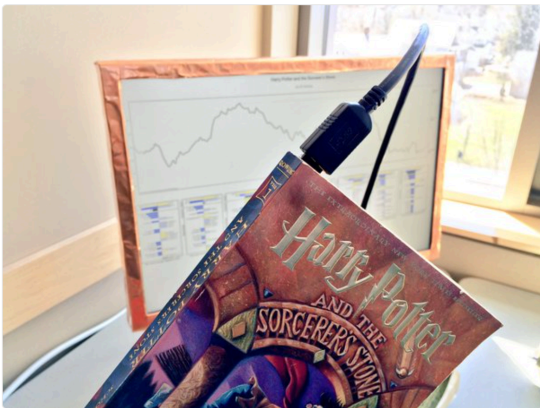


UVM 
@uvmvermont



Following

USB in a book? What is this wizardry? Check it out at the Student Research Conference creative lounge. #[uvmresearch](#)



RETWEETS LIKES

8

14



9:30 AM - 28 Apr 2016

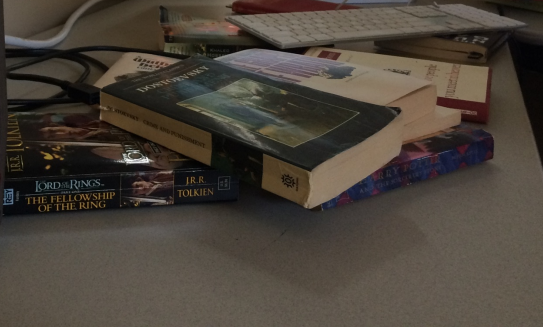
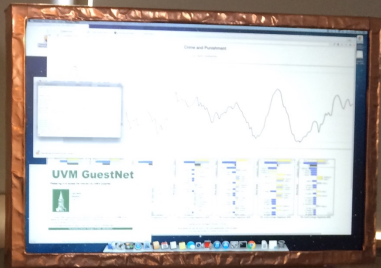
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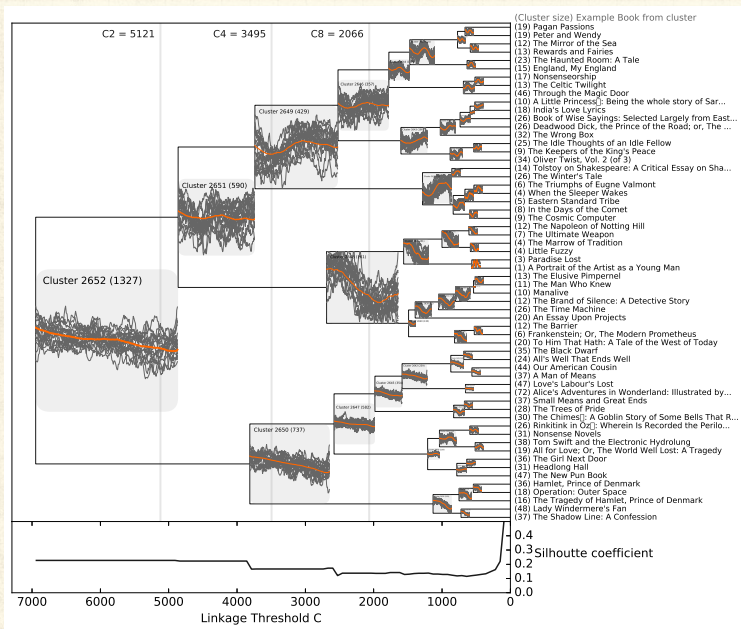
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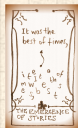
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Mode	Mode Arc	N_m	N_m/N	DL Median ▼	DL Mean ▽	DL Variance	Download Distribution
SV 1		263	15.1%	295.0	644.3	2207201	
-SV 1		442	25.3%	337.5	636.0	913464	
SV 2		230	13.2%	314.0	630.3	1058916	
-SV 2		169	9.7%	296.0	569.1	780365	
SV 3		104	6.0%	298.0	874.5	7826797	
-SV 3		108	6.2%	298.0	748.7	2517822	
SV 4		108	6.2%	316.0	848.8	2763060	
-SV 4		50	2.9%	292.0	770.7	1546202	
SV 5		48	2.7%	280.0	421.7	182443	
-SV 5		48	2.7%	263.5	462.0	211259	

FIG. 6: Download statistics for SVD Modes with more than 2.5% of books. Modes *SV 3* through *-SV 4* (both polarities of modes 3 and 4) exhibit a higher average number of downloads and more variance than the rest.



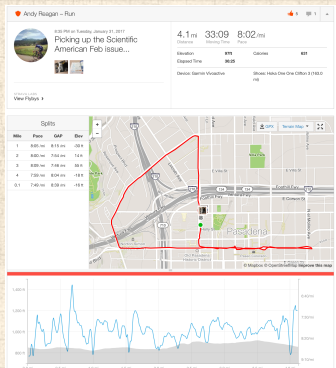
Another Great Moment in being Andy Reagan:

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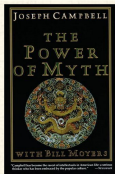
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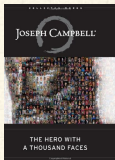
References



The “I wonder who wrote this?” Great Man Theory:



“The Power of Myth” [a](#) [↗](#)
by Campbell and Moyers (1991). [4]



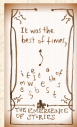
“The Hero with a Thousand Faces” [a](#) [↗](#)
by Joseph Campbell (2008). [3]

Highly influential but it's a trap! [↗](#)

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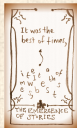


How to write a screenplay:

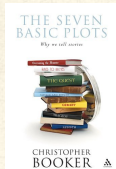


"Save the Cat!"  
by Blake Snyder (2005). [8]

-  9 acts.
-  Someone important to the main characters gets toasted in the second act, blah, blah.
-  Believes irony is key.
-  Logline = one or two sentence summary.
-  Logline fails to be a summary of logline.



Seven "good" stories?:



"The Seven Basic Plots: Why We Tell Stories" [a](#) [↗](#)
by Christopher Booker (2005). [2]

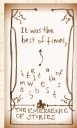
- 🧱 Seven Gateways to the Underworld (?)
- 🧱 Overcoming the Monster ×2 and the Thrilling escape from Death (plot).
- 🧱 Rags to Riches (plot).
- 🧱 The Quest (plot).
- 🧱 Voyage and Return (plot).
- 🧱 Comedy ×2 (plot but really structure).
- 🧱 Tragedy ×3 (plot).
- 🧱 Rebirth (plot).
- 🧱 The Dark Power: From Shadow into Light (master structure).

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The taxonomy of stories:

- **ANIMAL TALES** 1-299
 - Wild Animals 1-99
 - The Clever Fox (Other Animal) 1-69
 - Other Wild Animals 70-99
 - Wild Animals and Domestic Animals 100-149
 - Wild Animals and Humans 150-199
 - Domestic Animals 200-219
 - Other Animals and Objects 220-299
- **TALES OF MAGIC** 300-749
 - Supernatural Adversaries 300-399
 - Supernatural or Enchanted Wife (Husband) or Other Relative 400-459
 - Wife 400-424
 - Husband 425-449
 - Brother or Sister 450-459
 - Supernatural Tasks 460-499
 - Supernatural Helpers 500-559
 - Magic Objects 560-649
 - Supernatural Power or Knowledge 650-699
 - Other Tales of the Supernatural 700-749
- **RELIGIOUS TALES** 750-849
 - God Rewards and Punishes 750-779
 - The Truth Comes to Light 780-799
 - Heaven 800-809
 - The Devil 810-826
 - Other Religious Tales 827-849
- **REALISTIC TALES** 850-999
 - The Man Marries the Princess 850-869
 - The Woman Marries the Prince 870-879
 - Proofs of Fidelity and Innocence 880-899
 - The Obstinate Wife Learns to Obey 900-909
 - Good Precepts 910-919
 - Clever Acts and Words 920-929

Folkloristics: 




Aarne-Thompson
classification
systems 



Motif-based taxonomy.



Online classification
database 

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“Computational folkloristics”
Abello, Broadwell, and Tangherlini,
Communications of the ACM, **55**, 60–70,
2012. [1]

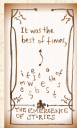
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☄ Motivation: “As a simple, historical example from the Danish materials, no one has yet classified (according to the ATU index) the several thousand fairy tales in the collections of the Danish Folklore Archive (<http://www.dafos.dk>), nor does it seem anyone ever will.”

☄ ‘Imagine a system in which the complexities of a folklore corpus can be explored at different levels of resolution, from the broad perspective of “distant reading” down to the narrow perspective of traditional “close reading.”





"The phylogeny of Little Red Riding Hood" ↗

Jamshid J. Tehrani,

PLoS ONE, **8**, e78871, 2013. [9]

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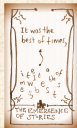
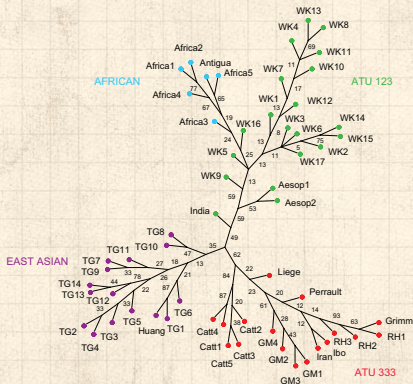


Figure 2. Majority-rules consensus of the most parsimonious trees returned by the cladistic analysis of the tales. Major groupings are labelled by region or ATU international type and indicated by the coloured nodes. Sub-types are indicated in the taxa labels (RH = Little Red Riding Hood; GM = Story of Grandmother; Catt = Catterinella; WK = The Wolf and the Kid; TG = Tiger Grandmother). Variants by particular authors, or from countries/ethnic groups that are discussed in the text have individual labels. Numbers beside the edges represent the level of support for individual clades returned by the bootstrap analysis.
doi:10.1371/journal.pone.0078871.g002



The taxonomy of stories:

Fundamental arcs:

- 🧱 Kill the Monster.
- 🧱 Rags to Riches (and Riches to Rags—*Metamorphosis*).
- 🧱 The Journey: a Search or a Quest.
- 🧱 Romance.
- 🧱 Narratives in Left Nullspace: All Stories of The Many.

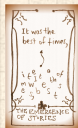
The three fundamental events of (non-clone) life:

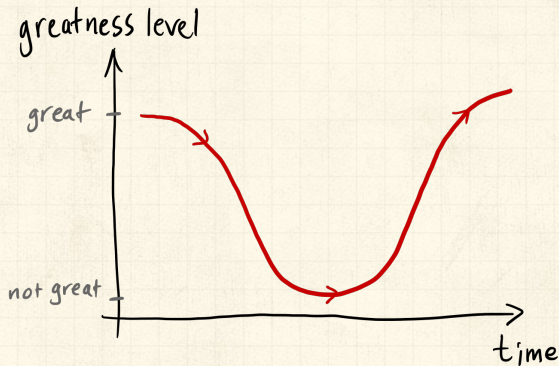
- 🧱 Hatchings, Matchings, and Dispatchings.
- 🧱 Stories encode survival algorithms.
- 🧱 Dynamic paths: the true, the possible, the unlikely.

Stories

Next

References





Stories

Next

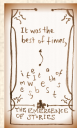
References



Used by Reagan and Bush in 1980.

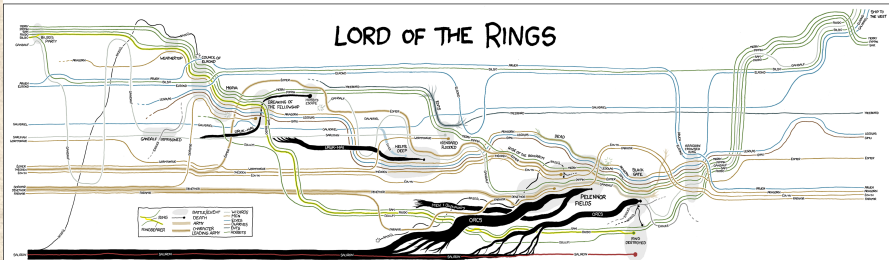


Template used by many others including Bill Clinton.

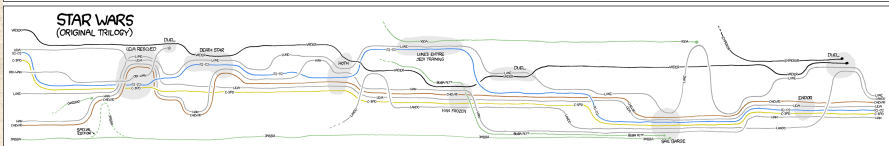


THESE CHARTS SHOW MOVIE CHARACTER INTERACTIONS.
THE HORIZONTAL AXIS IS TIME. THE VERTICAL GROUPING OF THE
LINES INDICATES WHICH CHARACTERS ARE TOGETHER AT A GIVEN TIME.

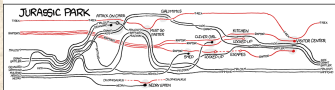
LORD OF THE RINGS



STAR WARS (ORIGINAL TRILOGY)



JURASSIC PARK



12 ANGRY MEN



PRIMER



<https://xkcd.com/657/>

Science/Art project: Create dynamic versions, ideally automatically.



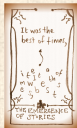
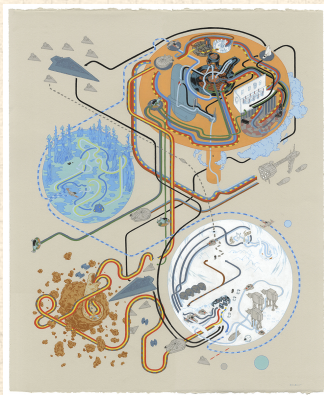
“Plotted: A Literary Atlas” [a](#) [↗](#)
by Andrew DeGraff (2015). ^[5]

PoCS
@pocsvox
Emotional arcs

Stories

Next











References



<http://www.andrewdegraff.com/moviemaps/> [↗](#)



Next:

-  Evolve hedonometer.org  and panometer.org 
-  Add more thing-o-meters.
-  More retrospective pieces (music lyrics, speeches).
-  Continue work on other emotions.
-  Other input streams (e.g., BBC).
-  Full expansion to phrase-based analysis.
-  Real-time extraction of Frames and Stories.
-  Everything about stories.

Stories

Next

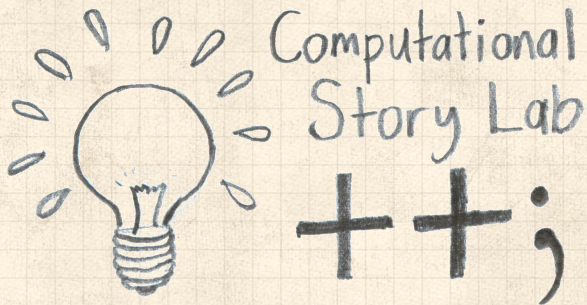
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Stories

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