What’s the Story?
Principles of Complex Systems | @pocsvox
CSYS/MATH 300, Fall, 2017

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Vermont Advanced Computing Core | University of Vermont

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On Instagram at pratchett_the_cat 🐱
It’s all about algorithms (stories):


Sir Terry Pratchett’s Narrativium:

“The most common element on the disc, although not included in the list of the standard five: earth, fire, air, water and surprise. It ensures that everything runs properly as a story.”

“A little narrativium goes a long way: the simpler the story, the better you understand it. Storytelling is the opposite of reductionism: 26 letters and some rules of grammar are no story at all.”

“Heroes only win when outnumbered, and things which have a one-in-a-million chance of succeeding often do so.”
Competing storytelling organizations:
- News.
- Art.
- Music industry.
- Books, magazines.
- Movie studios, Netflix, HBO, Disney.
- Video Games.
- Social media: Facebook, Medium, Tumblr, blogs.

Cultural products from Pantheon:
- Writers, artists, movie directors, video game directors.
Understanding the Sociotechnocene—Stories:

- **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.
Adjacent narratives—and why mistruths and conspiracy theories exist and flourish:
1999 Gallup poll:

- 6% of Americans said the lunar landings were fake.
- 5% were undecided.
- Video replay (The Comments).

Buzz Aldrin has enough:
JK Rowling doesn’t exist: conspiracy theories the internet can’t resist, The Guardian, 2017-10-27:

Highlights:

- Per the title, JK Rowling doesn’t exist.
  - Q. “Is it possible that a person can write six thick books that are translated into 55 languages and sell more than 250 million copies in less than 10 years? — Nina Grünfeld”
  - A. “Yes. Yes it is.” — This course.
Phantom time hypothesis:

- The years 614–911 AD never existed.
- Straight up jump of 297 years orchestrated by a first millennium cabal.
- The year 2017 AD is really 1820 AD.
- Good to know.
- Holy Roman Emperor Otto III (@TheBoss37), Pope Sylvester II (@PSly2) wanted to live in 1000 AD, legitimate their power.
- Crushed by reality: Records of solar eclipses, comets, dendrochronology.
Finland does not exist:

The Real Map: The Secret Behind Finland

- Eastern Sweden
  (Where people from "Finland" actually live)
- Norway
- Sweden
- "Finland" (Actually a Japanese fishing colony)
- Denmark
- Estonia
- Latvia
- Russia
Poe’s law

In short: There is no parody too extreme that, when taken out of context, someone somewhere won’t take to be sincere.

Minor comment by Nathan Poe on christianforums.com:

“Without a winking smiley or other blatant display of humor, it is utterly impossible to parody a Creationist in such a way that someone won’t mistake for the genuine article.”

Usual win for Stigler’s Law of Eponymy.

Post by Jerry Schwarz on Usenet, 1983:

‘Avoid sarcasm and facetious remarks. Without the voice inflection and body language of personal communication these are easily misinterpreted. A sideways smile, :-) , has become widely accepted on the net as an indication that “I’m only kidding”. If you submit a satiric item without this symbol, no matter how obvious the satire is to you, do not be surprised if people take it seriously.’

Related: “Nobody ever went broke underestimating the intelligence of the American people” — H. L. Mencken (but not exactly).
Story Wars:

Nicholas Hénin, French Journalist, held captive for 10 months.
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 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.
"According to court documents, Mr. Welch said he had come armed to help rescue the children."

""The intel on this wasn’t 100 percent," he said."

He said he did not believe in conspiracy theories, but then added that the Sept. 11, 2001, attacks needed to be re-examined. He has listened to Alex Jones, whose radio show traffics in conspiracy theories and who once said that Mrs. Clinton “has personally murdered and chopped up” children. “He’s a bit eccentric,” Mr. Welch said. “He touches on some issues that are viable but goes off the deep end on some things.”"
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. [9]

Make the truth a needle in a haystack


“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.”
Stories generated the first surveillance state:

- Low tech, lost cost.
- Infrastructure maintained in the Social Wild by storytellers and storybelivers.
- Omnipresence and omniscience: The end of privacy.
The American Dream = Rags to Riches

- The story that anyone can become King or Queen.
- Story of individual, not the collective.
- But we know about fame and success:
  The presence of outsized fame in a social system means social imitation is a driver of value.
- Stories of societies can only hold if they have been and remain believable.
If not Trump, what? David Brooks, New York Times:

“We’ll probably need a new national story. Up until now, America’s story has been some version of the rags-to-riches story, the lone individual who rises from the bottom through pluck and work. But that story isn’t working for people anymore, especially for people who think the system is rigged.”

“I don’t know what the new national story will be, but maybe it will be less individualistic and more redemptive. Maybe it will be a story about communities that heal those who suffer from addiction, broken homes, trauma, prison and loss, a story of those who triumph over the isolation, social instability and dislocation so common today.”
Claim: Stories must have real substance to endure

- Enormous disasters: Fabrications of real experiences.
  - Plain old making stuff up: *A million little pieces* ... Oprah will get you.
  - Wikipedia’s has a list of famous fake memoirs.
  - Expansive plagiarism: *How Opal Mehta Got Kissed, Got Wild, and Got a Life*. #kudos
  - Self-plagiarism and more standard badness: *Jonah Lehrer*.
    - Amazingly: Made up Bob Dylan quotes.
  - Lance Armstrong. Also got to meet Oprah.

- Enormous power: Fiction that speaks to real experiences.
“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.”
Why English is such a great language for puns

Gamers now even take part in world championships

Punster pseudonym: “Punder Enlightening”

Being funny, a grand challenge for AI:


Pun-free paper title: “Generating Novel Puns and Plays of Word with Machine Learning”

“Warning: This paper may cause the reader to groan to death.”
Kurt Vonnegut on the shapes of stories: 

http://www.youtube.com/watch?v=oP3c1h8v2ZQ?rel=0
The Shapes of Stories by Kurt Vonnegut

Kurt Vonnegut gained worldwide fame and adoration through the publication of his novels, including *Slaughterhouse-Five*, *Cat’s Cradle*, *Breakfast of Champions*, and more.

But it was his rejected master’s thesis in anthropology that he called his prettiest contribution to his culture.

The basic idea of his thesis was that a story’s main character has ups and downs that can be graphed to reveal the story’s shape.

The shape of a society’s stories, he said, is at least as interesting as the shape of its pots or spearheads. Let’s have a look.

Designer: Maya Elam, www.mayaelam.com
Sources: A Man without a Country and *Palm Sunday* by Kurt Vonnegut
Kurt Vonnegut on the shapes of stories:

**Man in Hole**
- The main character gets into trouble then gets out of it again and ends up better off for the experience.
- Arsenic and Old Lace
- Harold & Kumar Go To White Castle

**Boy Meets Girl**
- The main character comes across something wonderful, gets it, loses it, then gets it back forever.
- Jane Eyre
- Eternal Sunshine of the Spotless Mind

**From Bad to Worse**
- The main character starts off poorly then gets continually worse with no hope for improvement.
- The Metamorphosis
- The Twilight Zone

**Which Way Is Up?**
- The story has a lifelike ambiguity that keeps us from knowing if new developments are good or bad.
- Hamlet
- The Sopranos

**Creation Story**
- In many cultures’ creation stories, humankind receives incremental gifts from a deity. First major staples like the earth and sky, then smaller things like sparrows and cell phones. Not a common shape for Western stories, however.

**Old Testament**
- Humankind receives incremental gifts from a deity, but is suddenly ousted from good standing in a fall of enormous proportions.
- Great Expectations

**New Testament**
- Humankind receives incremental gifts from a deity, is suddenly ousted from good standing, but then receives off-the-charts bliss.
- Great Expectations with Dickens’ alternate ending

**Cinderella**
- It was the similarity between the shapes of Cinderella and the New Testament that thrilled Vonnegut for the first time in 1947 and then over the course of his life as he continued to write essays and give lectures on the shapes of stories.
Ron Swanson:

http://www.youtube.com/watch?v=afWLwPZZv2w?rel=0

The emotional shapes of stories—Moby Dick:

Partly inspired by Vonnegut’s Shapes of Stories.
Online, interactive Emotional Shapes of Stories for 10,000+ books:

Frankenstein; Or the Modern Prometheus (wiki)
by Mary Shelley

Book happiness time series:
Explore the work’s emotional dynamics by sliding and resizing the reference and comparison sections.

Word Shift:
Why comparison section is less happy than the reference one
Reference section's happiness = 6.31
Comparison section's happiness = 5.35

Word Rank:

Lens (for advanced users):
Slide and resize the stop-window to change the lens:
Online, interactive Emotional Shapes of Stories for 10,000+ books:

**Harry Potter (all books together)**
by J.K. Rowling

**Book happiness time series:**
Explore the work's emotional dynamics by sliding and resizing the reference and comparison sections.

**Word Shift:**
Why comparison section is less happy than the reference one
Reference section's happiness = 6.13
Comparison section's happiness = 5.14

**Word Rank:**

**Lens (for advanced users):**
Slide and resize the stop-window to change the lens:

**Per word average happiness shift**
Online, interactive Emotional Shapes of Stories for 1,000+ movie scripts:

**Pulp Fiction**
directed by Quentin Tarantino

**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 “Senie, miny, miney, moe...” just his mouth mouthing the words and his finger going back and forth between the two.

Butch are Marsellus are terrified.

Maynard looks back and forth at the victims.

The Gimp’s eyes go from one to the other inside the mask.
http://whyfiles.org/2015/in-10-languages-happy-words-beat-sad-ones/
Harry Potter and the Deathly Hallows
by J.K. Rowling

USB in a book? What is this wizardry? Check it out at the Student Research Conference creative lounge. #uvmresearch
Harry Potter and the Chamber of Plot Devices:
Six basic shapes: Tragedy, Icarus, Oedipus, Rags-to-Riches, Man-in-a-hole, Cindarella.

Top Stories:
1: Alice’s Adventures Under Ground: Being a facsimil... (19002)
2: Dreams (1439)
3: The Human Comedy: Introductions and Appendix (1968)
4: The History Of The Decline And Fall Of The Roman ... (25717)
5: The Ballad of Reading Gaol (301)

Top Stories:
1: A Primary Reader: Old-time Stories, Fairy Tales a... (7841)
2: The House of the Vampire (17144)
3: Savrola: A Tale of the Revolution in Laurania (50906)
4: The Dance (by An Antiquary): Historic Illustration... (17289)
5: Romeo and Juliet (1777)

Top Stories:
1: Typhoon (1142)
2: Principles of Orchestration, with Musical Example... (3390)
3: How to Sing: [Meine Gesangskunst] (39130)
5: Self-Instructor in the Art of Hair Work, Dressing... (38658)

Top Stories:
1: The Yoga Sutras of Patanjali: The Book of the Spi... (2526)
2: Stories from Hans Andersen (17860)
3: Pragmatism: A New Name for Some Old Ways of Thinking (5116)
4: A Hero of Our Time (913)
5: On the Nature of Things (785)
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:
The “I wonder who wrote this?” Great Man Theory:


Highly influential but it’s a trap!
How to write a screenplay:

“Save the Cat!” by Blake Snyder (2005). [10]

- 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” by Christopher Booker (2005).

- 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).
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

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**Folkloristics:**

- Academic area formally started around 1900.
- Aarne–Thompson classification systems
- Motif-based taxonomy.
- Online classification database
“Computational folkloristics”
Abello, Broadwell, and Tangherlini,

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,
Famous folklore scholar:

- Comic Book Guy (CBG).
- Real name: Jeffrey “Jeff” Albertson.
- Master’s degree in Folklore and Mythology.
The taxonomy of stories:

Fundamental arcs:
- Kill the Monster.
- Rags to Riches (and Riches to Rags—*Metamorphosis*).
- Journey/Odyssey: Search for a salvation, a “Holy Grail”.
- Romance.
- Narratives in Left Nullspace: All Stories of The Many.

What about comedies?
- Comedies are not in themselves a story, but a way of telling stories.
Stories are algorithms for life:

Homo narrativus:
- Provide dynamic paths and trajectories.
- If this, then that.
- Convey and reinforce how to behave, how not to behave.
- Full ecology of stories = Competing, self-defending operating system for people’s minds.

Aphorisms as algorithms:
- Pride cometh before the fall.
- A stitch in time saves nine.
- Look before you leap.
- Anti-aphorism: The one who hesitates is lost.
The boiled-down essence of stories:

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

- Hatchings, Matchings, and Dispatchings.
- Stories encode survival algorithms.
- Survival algorithms for individuals and groups.
- Dynamic paths: the true, the possible, the unlikely.
- The unifying theme of existence is existence.
Super Survival of the Stories:

The Desirability of Storytellers, The Atlantic, Ed Yong, 2017-12-05.

- Study of Agta, Filipino hunter-gatherers.
- Storytelling valued well above all other skills including hunting.
- Stories encode prosocial norms such as cooperation.
- Like the best stories, the best storytellers reproduce more successfully.
Stories matter:

- 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.

http://www.andrewdegraff.com/moviemaps/
References I


References II

The Power of Myth. 

Plotted: A Literary Atlas. 

References III

The game story space of professional sports: Australian Rules Football.  

How the Chinese government fabricates social media posts for strategic distraction, not engaged argument.  
American Political Science Review, 2017 Forthcoming.

[10] B. Snyder.  
Save the Cat!  
The phylogeny of Little Red Riding Hood. 