

Extracting Narrative Structure

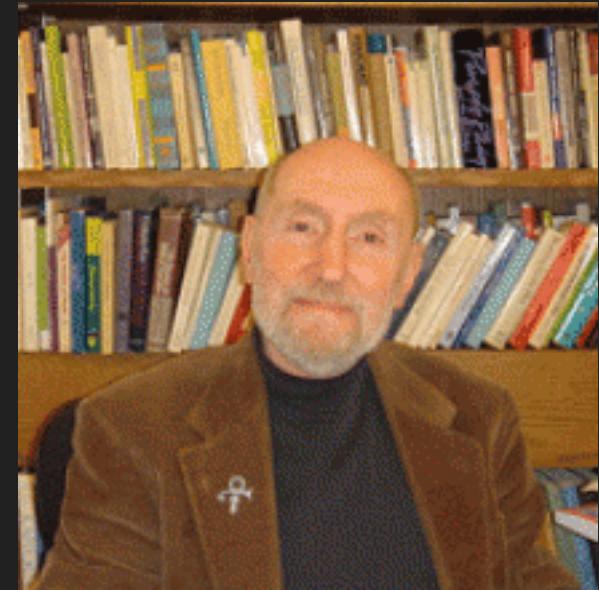
Daphne Ippolito
Chris Callison-Burch

<http://interactive-fiction-class.org>

Defining Narrative

The recounting of one or more real or fictitious EVENTS communicated by one, two, or several (more or less overt) NARRATORS to one, two, or several (more or less overt) NARRATEES.

Even such possibly uninteresting texts as “The man opened the door,” “The goldfish died,” and “The glass fell on the floor” are narratives, according to this definition.



Gerald Prince – Dictionary of Narratology (1987)

NARRATIVE DISCOURSE REVISITED

GÉRARD GENETTE

TRANSLATED BY JANE E. LEWIN

Narrative tense

- Order
- Speed
- Frequency

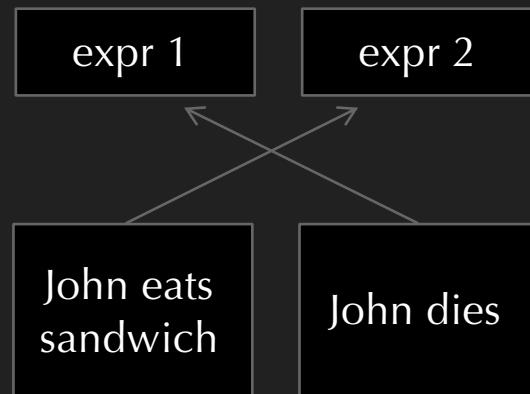
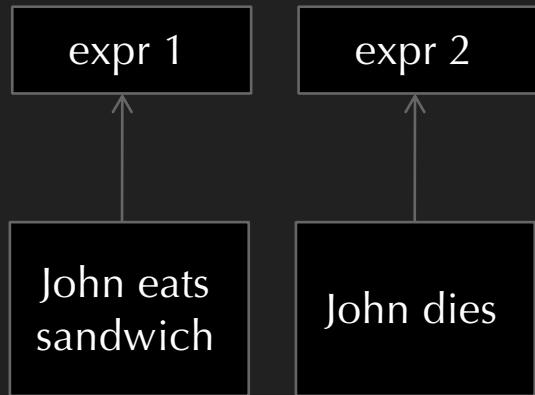
Narrative mood

- Distance
- Focalization

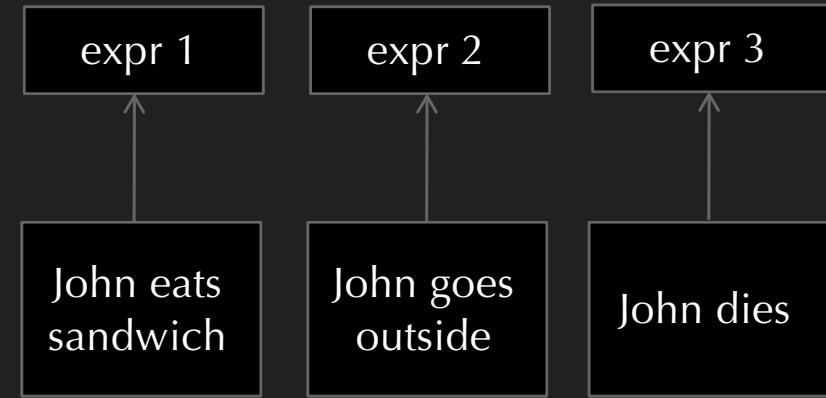
Narrative voice

- Time of narrating
- Narrator & narratee

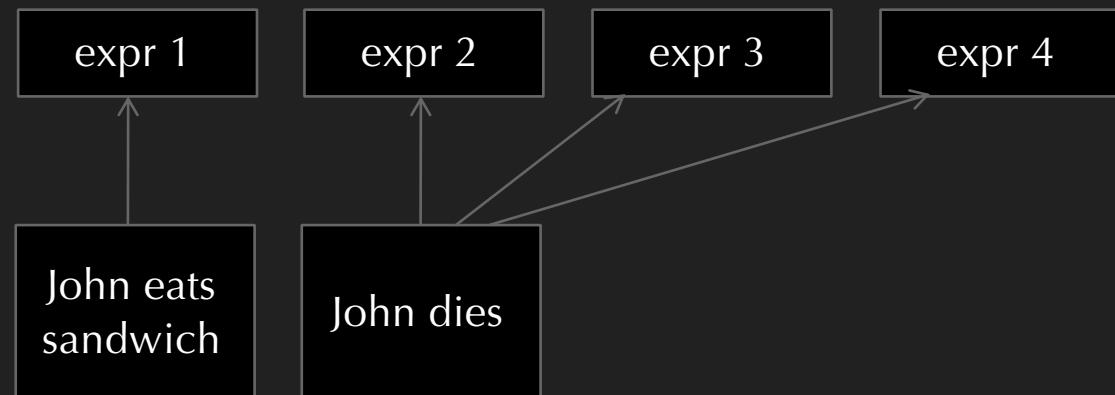
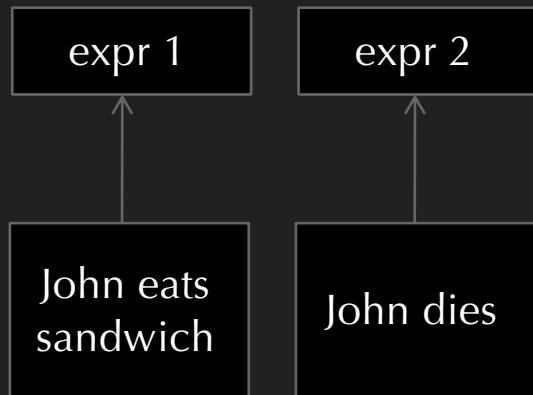
Order



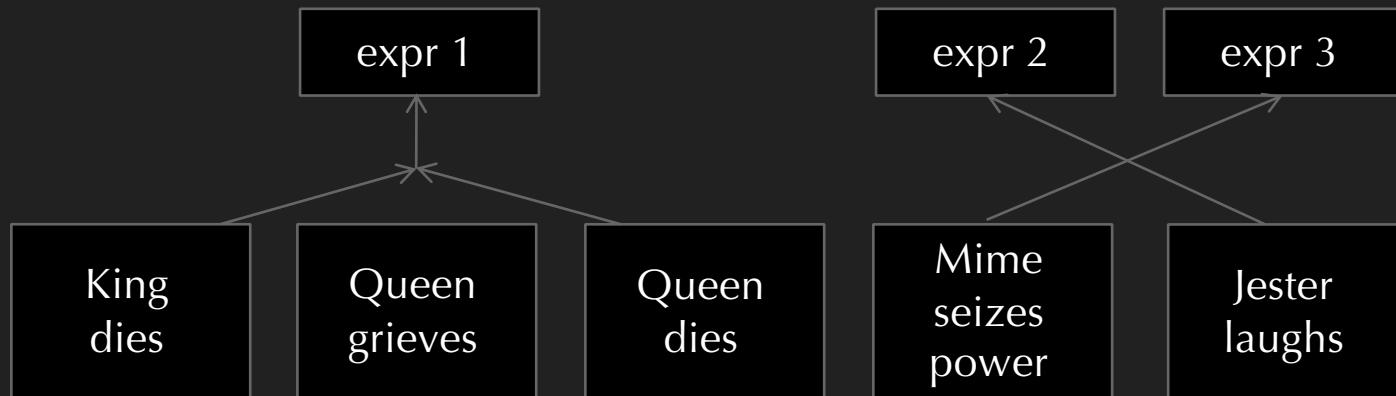
Speed



Frequency



Order, Speed, & Frequency



Defining Narrative

Narrative is the **representation** of an **event** or a **series of events**. Some definitions of narrative require 2 or more events that are **causally related**.

Description (no events): My dog has fleas

Narrative: My dog was **bitten** by a flea



The Cambridge **Introduction** to

Narrative

SECOND EDITION

Narrative discourse versus story

Story == Underlying Content

Story is an event or sequence of events (the action).

Stories have:

- Events
- Entities / characters
- Storyworld

Narrative discourse == Expression

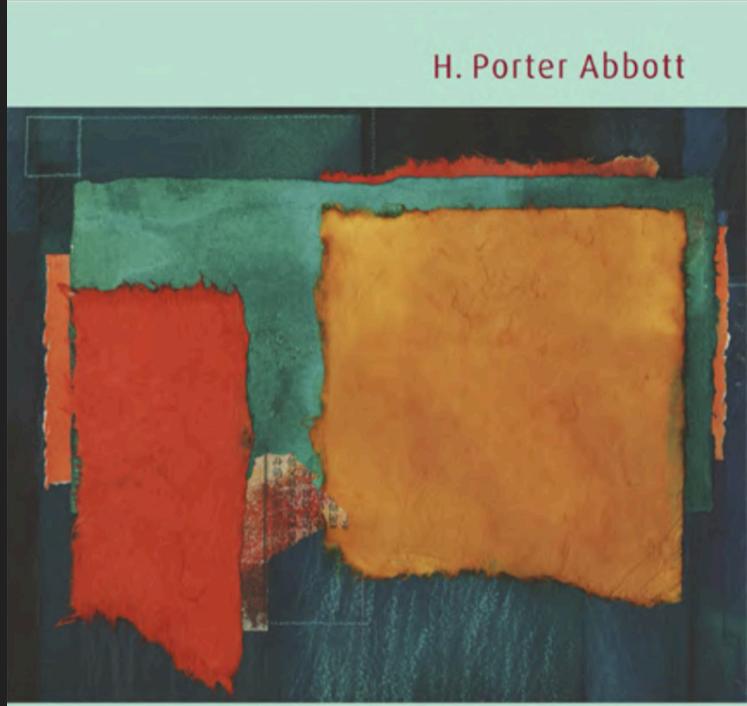
How the story is conveyed.

- Ordering of events
- Focus
- Person

Defining Narrative

Events can represented in many different ways – by a narrator, by an actor, or by paint.

The underlying events are part of the story, and the way that they are represented or conveyed is narrative discourse.



The Cambridge **Introduction** to

Narrative

SECOND EDITION

Ordering of events

We can squeeze a day's worth of events into one sentence:

When I woke up, I packed two loaded guns and a ski mask, drove to the bank, robbed it, and was back in time for dinner.

We can tell the same story backwards and still convey the same sequence of events:

I was back in time for dinner, having robbed the bank to which I had driven with a ski mask and two loaded guns just after my nap.



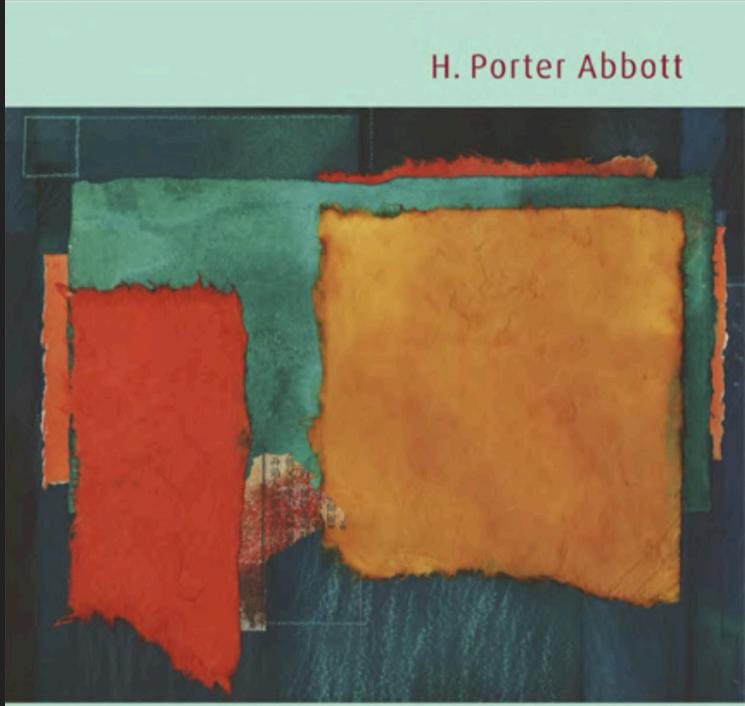
The Cambridge **Introduction** to

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Person, focus

He loved that old familiar, yet always strangely new, sensation of being someone else inside his ski mask, a pistol in each hand, watching the frightened teller count out a cool million. Nothing like it to wake a guy up. Nothing like it to give him a good appetite.



The Cambridge **Introduction** to

Narrative

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“Narrativity”

Tiny narratives like *She drove the car to work* somehow don’t feel like narratives. They lack “narrativity” or sense of someone “telling a story”.

Do we need more than one event?

She ate lunch. Then she drove the car to work.

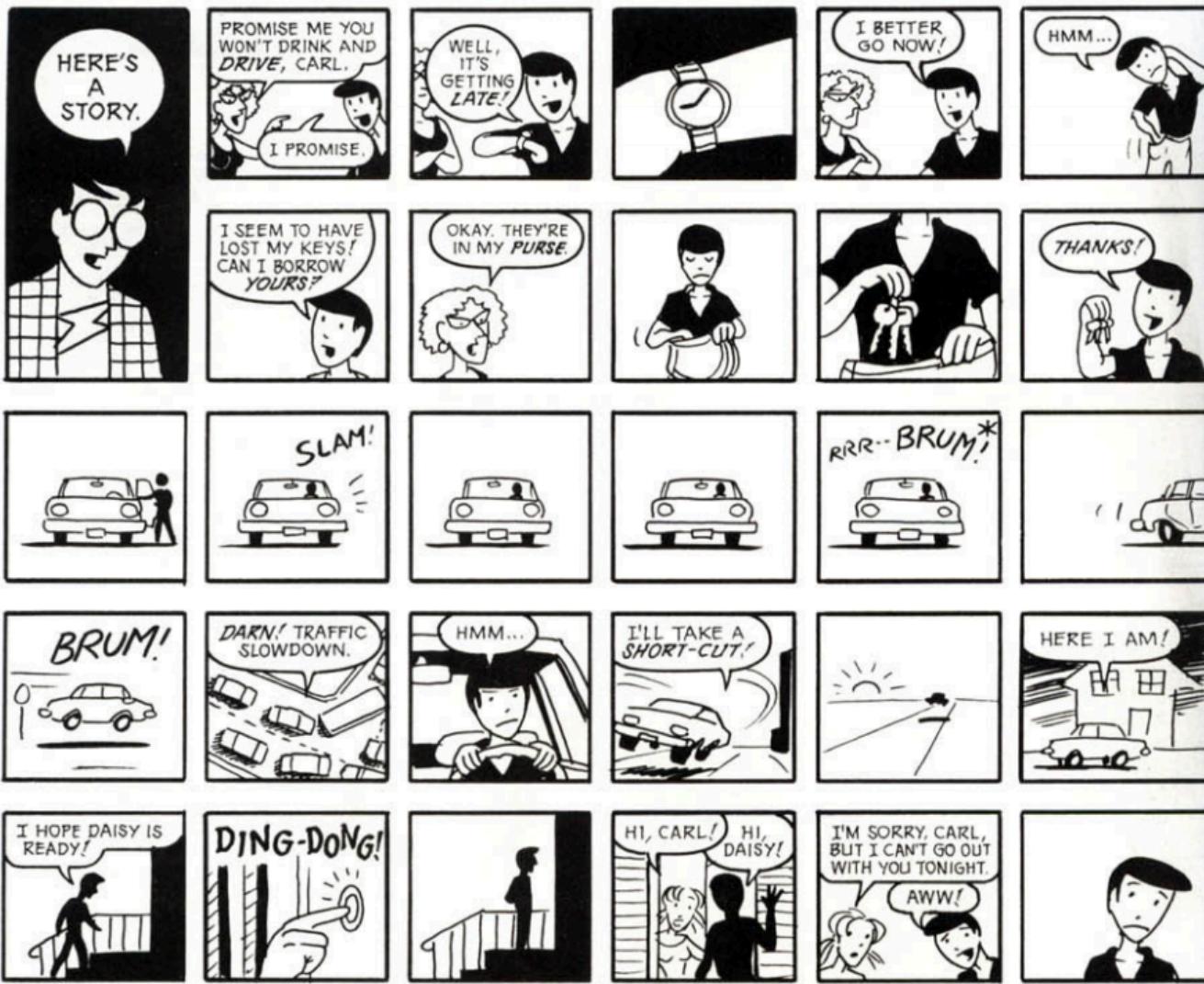
Do we need elements like development, rising action, setting, or a recognizable narrative? We can make it feel more like a story with just one extra word.

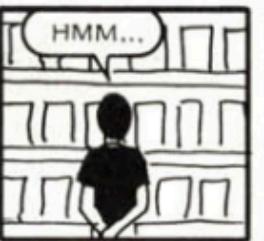
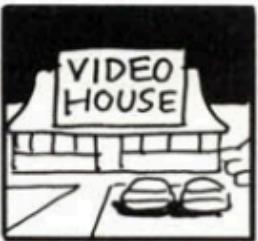
Brooding, she ate lunch. Then she drove the car to work.

Relative importance of events in a story

Constituent events are necessary for the story to be the story it is. They are the turning points, the events that drive the story forward and that lead to other events

Supplementary events are not necessary for the story. They don't lead anywhere. If they are removed, the story will still be recognizable as the same story.





END







What to include?

Supplementary events invariably have their own impact and can carry a considerable amount of the narrative's meaning.

They also raise an interesting question that constituent events do not: Why were they include? Since they are not necessary to the story, why did the author feel compelled to put them into the narrative? Asking these questions is often useful in interpreting a narrative.

What if abstract away from
expression and analyze structure
across narratives?

Vladimir Propp

a Soviet folklorist and scholar who analyzed the basic structural elements of Russian folk tales in the 1920s to identify their simplest irreducible structural units.

Based on his analysis of 100 folktale, there were 31 basic structural elements (or 'functions') that typically occurred in fairy tales, and 7 abstract characters.



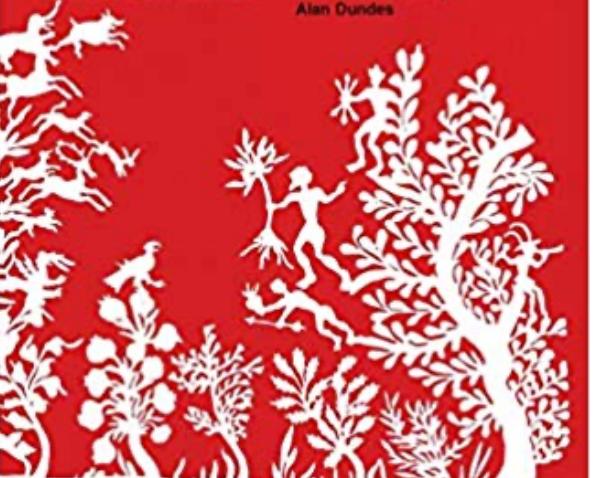
Hero	Accompanies the hero for some or most of the quest and can sometimes help.
Villain	Sends the hero on his/her quest.
Helper	Gives the hero important information or equipment to help him/her in the quest
Mentor	Seeks riches, glory and or power, and seeks to stop the hero succeeding in the quest or mission.
Blocker	Acts as a reward for the hero succeeding in the quest.
Prize	The central protagonist of the narrative who drives it forward.
Dispatcher	Tries to prevent the hero completing at least part of the quest.

Morphology of the Folktale

By V. Propp

First Edition Translated by
Laurence Scott with an
Introduction by
Svatava Pirkova-Jakobson

Second Edition Revised and
Edited with a Preface by
Louis A. Wagner
New Introduction by
Alan Dundes



Definition	Function	Definition	Function
1 Absentation	The hero left home	17 Branding, marking	The hero is marked with symbol
2 Interdiction	A prohibition is given to the hero	18 Victory	The hero won
3 Violation	The hero violated the prohibition	19 Liquidation	The hero obtained the item requested
4 Reconnaissance	The villain investigates about the hero	20 Return	The hero comes home
5 Delivery	The villain obtains the hero's information	21 Pursuit, chase	The hero is hunted
6 Trickery	The villain tries to trick the hero to get something	22 Rescue	The hero is rescued from the hunt
7 Complicity	The villain tricks the hero	23 Unrecognized arrival	The hero is not acknowledged once he or she arrives home.
8 Villainy	The villain hurts the hero	24 Unfounded claims	A false hero claims to be the hero
8a Lack	The hero needs something	25 Difficult task	The hero is given a difficult task to fulfill.
Mediation, the connective incident	The hero or someone else needed something and requested to get it	26 Solution	The hero solved the task
9 Beginning counteraction	The hero reacts to the request	27 Recognition	The hero is acknowledged
	The hero searches the		The hero revealed the

Joseph Campbell

Wrote a book called *The Hero with a Thousand Faces* (1949), in which he discusses his theory of the journey of the archetypal hero shared by world mythologies, termed the monomyth.





A hand-drawn style title card featuring a large, thin black circle centered on a light beige background. Inside the circle, the words "HERO'S JOURNEY" are written in a bold, black, sans-serif font. The letters have a slightly irregular, hand-painted appearance.

HERO'S JOURNEY

Masterplots

Masterplots are stories that we tell over and over in myriad forms and that connect vitally with our deepest values, wishes, and fears. Cinderella is one of them. What is necessary for the story of Cinderella to be the story of Cinderella? Is a magical transformation of Cinderella necessary? Is the ball necessary? Is the Prince's search for Cinderella necessary? Is the happy ending necessary?

Works like Harry Potter and the Goblet of Fire are narratives. The masterplots that underlie them are skeletal and adaptable, and they can recur in narrative after narrative. Roger Schank proposed the term "story skeleton" for something like masterplots.

Roger Schank and Scripts

How do people organize all the knowledge they must have in order to understand? How do people know what behavior is appropriate for a particular situation?

Scripts Plans Goals and Understanding

An Inquiry into Human Knowledge Structures

Roger Schank
Robert Abelson



Script: RESTAURANT
Track: Coffee Shop
Props: Tables
Menu
F-Food
Check
Money

Roles: S-Customer
W-Waiter
C-Cook
M-Cashier
O-Owner

Entry conditions: S is hungry.
S has money.

Results: S has less money
O has more money
S is not hungry
S is pleased (optional)

Scene 1: Entering

S **PTRANS** S into restaurant
S **ATTEND** eyes to tables
S **MBUILD** where to sit
S **PTRANS** S to table
S **MOVE** S to sitting position

Scene 2: Ordering

(menu on table) (W brings menu)
S PTRANS menu to S

W PTRANS W to table
W ATRANS menu to S

S MTRANS food list to CP(S)
• **S MBUILD** choice of F
S MTRANS signal to W
W PTRANS W to table
S MTRANS 'I want F' to W

W PTRANS W to C
W MTRANS (ATRANS F) to C

C MTRANS 'no F' to W
W PTRANS W to S
W MTRANS 'no F' to S
(go back to *) or
(go to Scene 4 at no pay path)

C DO (prepare F script)
to Scene 3

Can we learn scripts
automatically?

Can we learn scripts
automatically?



Unsupervised Learning of Narrative Schemas and Their Participants

Nathaniel Chambers and Dan Jurafsky
Stanford University, 2009

George Tolkachev (georgeto@seas.upenn.edu)
February 20, 2020

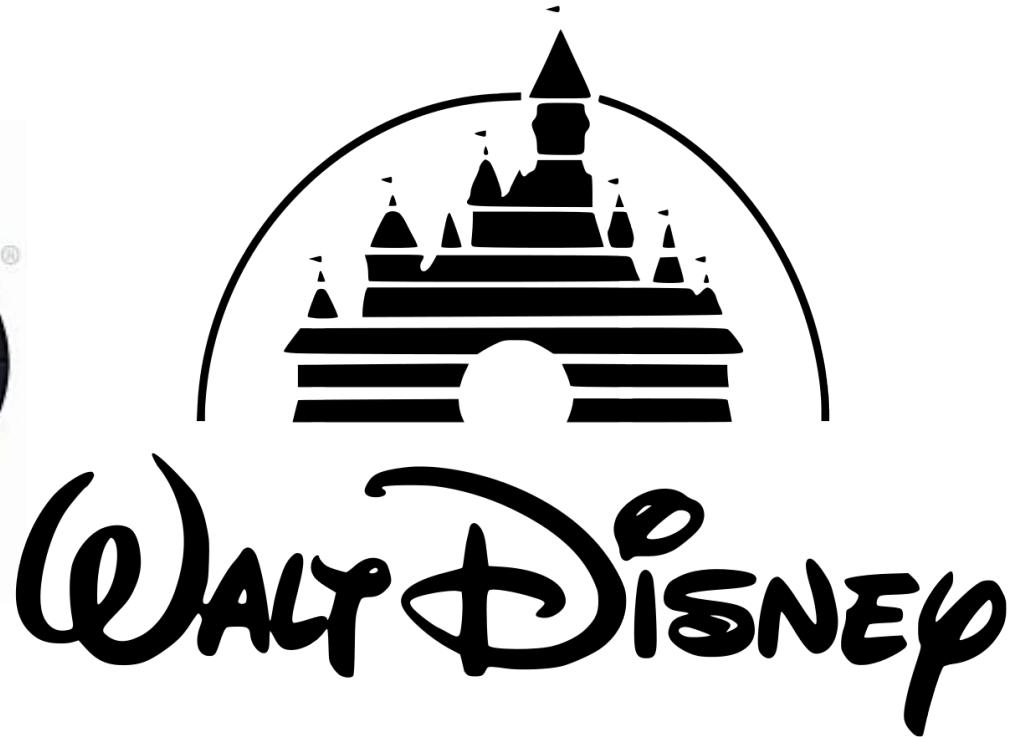
KAIROS

Knowledge-directed Artificial Intelligence Reasoning Over Schemas

Kick-Off Meeting

9-11 September 2019







Beyond Canonical Texts: A Computational Analysis of Fanfiction

Written by Smitha Milli, David Bamman

Named entity recognition

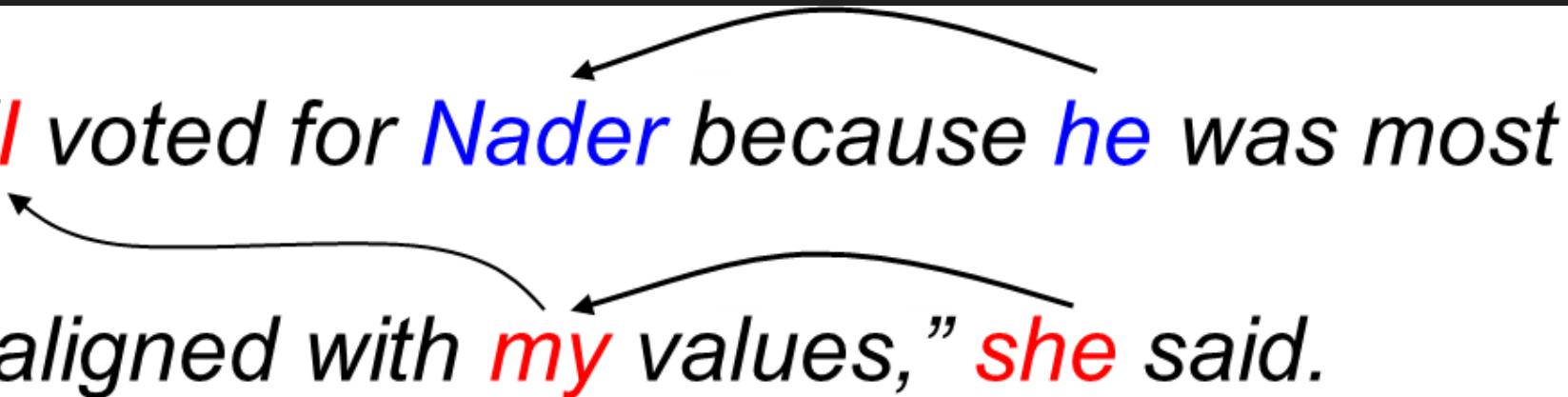
NER is a subtask of information extraction that seeks to locate and classify named entity mentioned in unstructured text into pre-defined categories such as person names, organizations, locations, medical codes, time expressions, quantities, monetary values, percentages, etc.

...k PERSON , the F.B.I. GPE senior counterintelligence agent who disparaged President Trump PERSON in inflammatory text messages and helped oversee the Hillary Clinton PERSON email and Russia GPE investigations, has been fired for violating bureau policies, Mr. Strzok PERSON 's lawyer said Monday DATE .Mr. Trump and his allies seized on the texts — exchanged during the 2016 DATE campaign with a former F.B.I. GPE lawyer, Lisa Page — in PERSON assailing the Russia GPE investigation as an illegitimate "witch hunt." Mr. Strzok PERSON , who rose over 20 years DATE at the F.B.I. GPE to become one of its most experienced counterintelligence agents, was a key figure in the early months DATE of the inquiry.Along with writing the texts, Mr. Strzok PERSON was accused of sending a highly sensitive search warrant to his personal email account.The F.B.I. GPE had been under immense political pressure by Mr. Trump PERSON to dismiss Mr. Strzok PERSON , who was removed last summer DATE from the staff of the special counsel, Robert S. Mueller III PERSON . The president has repeatedly denounced Mr. Strzok PERSON in posts on

Coreference resolution

Co-reference occurs when two or more expressions in a text refer to the same person or thing; they have the same referent, e.g. Bill said he would come; the proper noun Bill and the pronoun he refer to the same person

“I voted for Nader because *he* was most aligned with *my* values,” *she* said.



The diagram illustrates coreference resolution with three curved arrows. The first arrow points from the word 'he' in the phrase 'because he was most aligned' back to the name 'Nader' in the previous sentence. The second arrow points from the word 'my' in the phrase 'aligned with my values' back to the pronoun 'I' in the first sentence. The third arrow points from the word 'she' in the final clause 'she said.' back to the pronoun 'she' in the first sentence, indicating that both 'she' and 'she' refer to the same person.

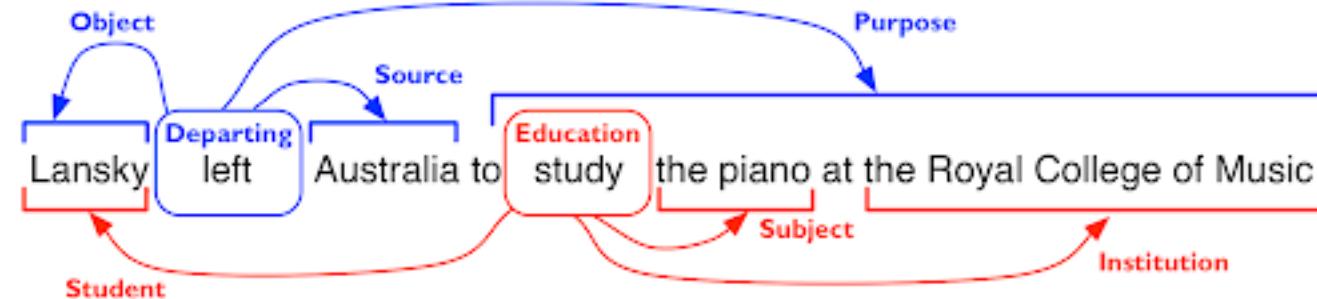
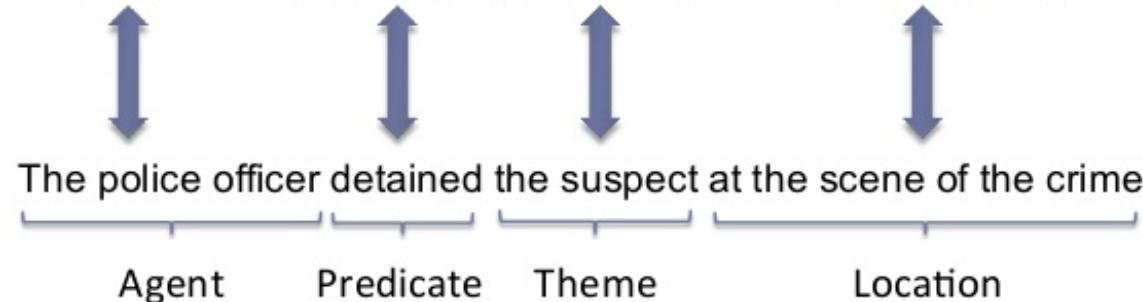
FrameNet

A semantic frame can be thought of as a conceptual structure describing an event and the participants in it.

Frame: STATEMENT	
This frame contains verbs and nouns that communicate the act of a SPEAKER to address a MESSAGE to some ADDRESSEE using language. A number of the words can be used performatively, such as <i>declare</i> and <i>insist</i> .	
Frame Elements	SPEAKER Evelyn <u>said</u> she wanted to leave. MESSAGE Evelyn <u>announced</u> that she wanted to leave. ADDRESSEE Evelyn <u>spoke to</u> me about her past. TOPIC Evelyn's <u>statement</u> about her past MEDIUM Evelyn <u>preached</u> to me over the phone.
Predicates	acknowledge.v, acknowledgment.n, add.v, address.v, admission.n, admit.v, affirm.v, affirmation.n, allegation.n, allege.v, announce.v, announcement.n, assert.v, assertion.n, attest.v, aver.v, avow.v, avowal.n, ...

Semantic Role Labeling

Who did what to whom at where?



Positive Pointwise Mutual Information (PPMI)

PMI is a measure of association

$$\text{pmi}(x; y) \equiv \log \frac{p(x, y)}{p(x)p(y)} = \log \frac{p(x|y)}{p(x)} = \log \frac{p(y|x)}{p(y)}$$

Counting occurrences and co-occurrences of words in a text corpus can be used to approximate the probabilities

Narrative Cloze Test

A cloze test removes words from a text and asks the participant to fill in the missing language item. Cloze tests require the ability to understand context and vocabulary in order to identify the correct language or part of speech that belongs in the deleted passages. This exercise is commonly administered for the assessment of native and second language learning and instruction.

Today, I went to the _____ and bought some milk and eggs. I knew it was going to rain, but I forgot to take my _____, and ended up getting wet on the way.

Narrative Cloze Task

event₁ event₂ _____ event₄ ... event_L



What word
should fill in the
gap?

take → nsubj
tell → nsubj
see → nsubj
...
persuade → dobj
sail → nsubj
regard → dobj

Event vocabulary