

Scripts and Events

Lara J. Martin (she/they)

<https://laramartin.net/interactive-fiction-class>

Learning Objectives

Start to identify the limitations of using transformers for storytelling and what attributes a good storytelling model would require

Differentiate between a script and causal chains

Create your own script

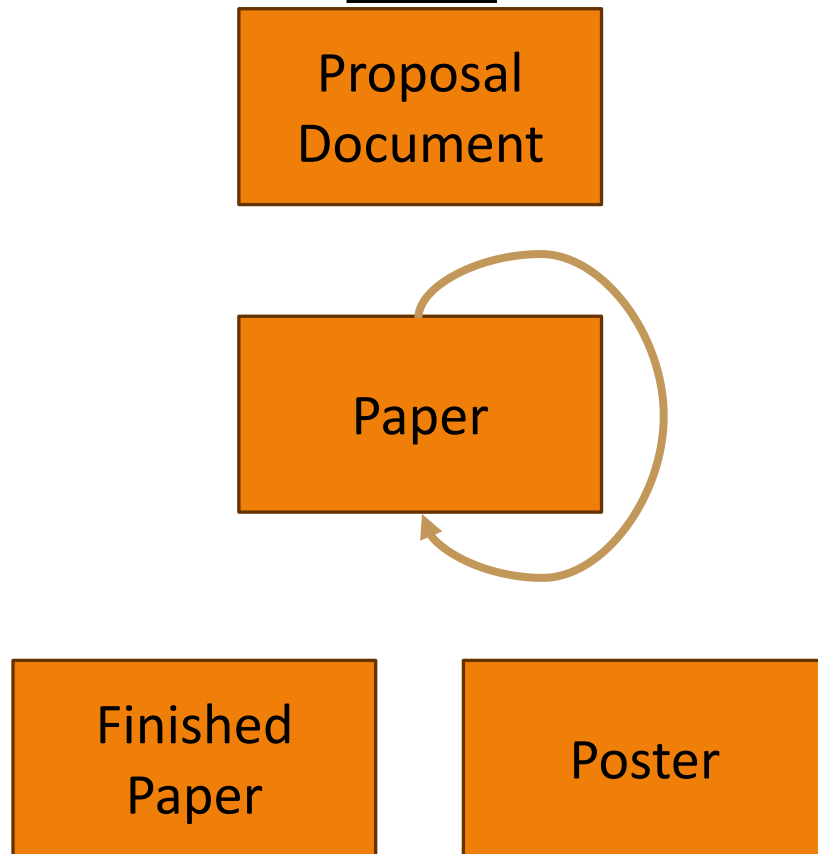
Speculate how scripts can be used in story generation

Distinguish between causal and probabilistic events

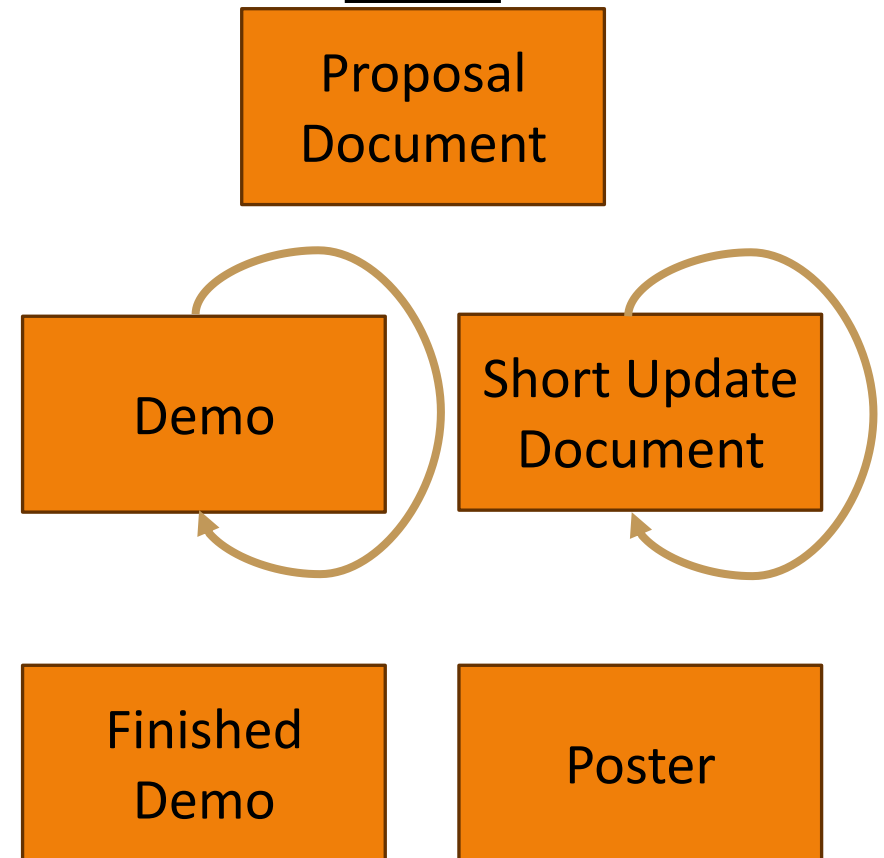
Identify the strengths and limitations of scripts

Project Flow

Paper



Demo



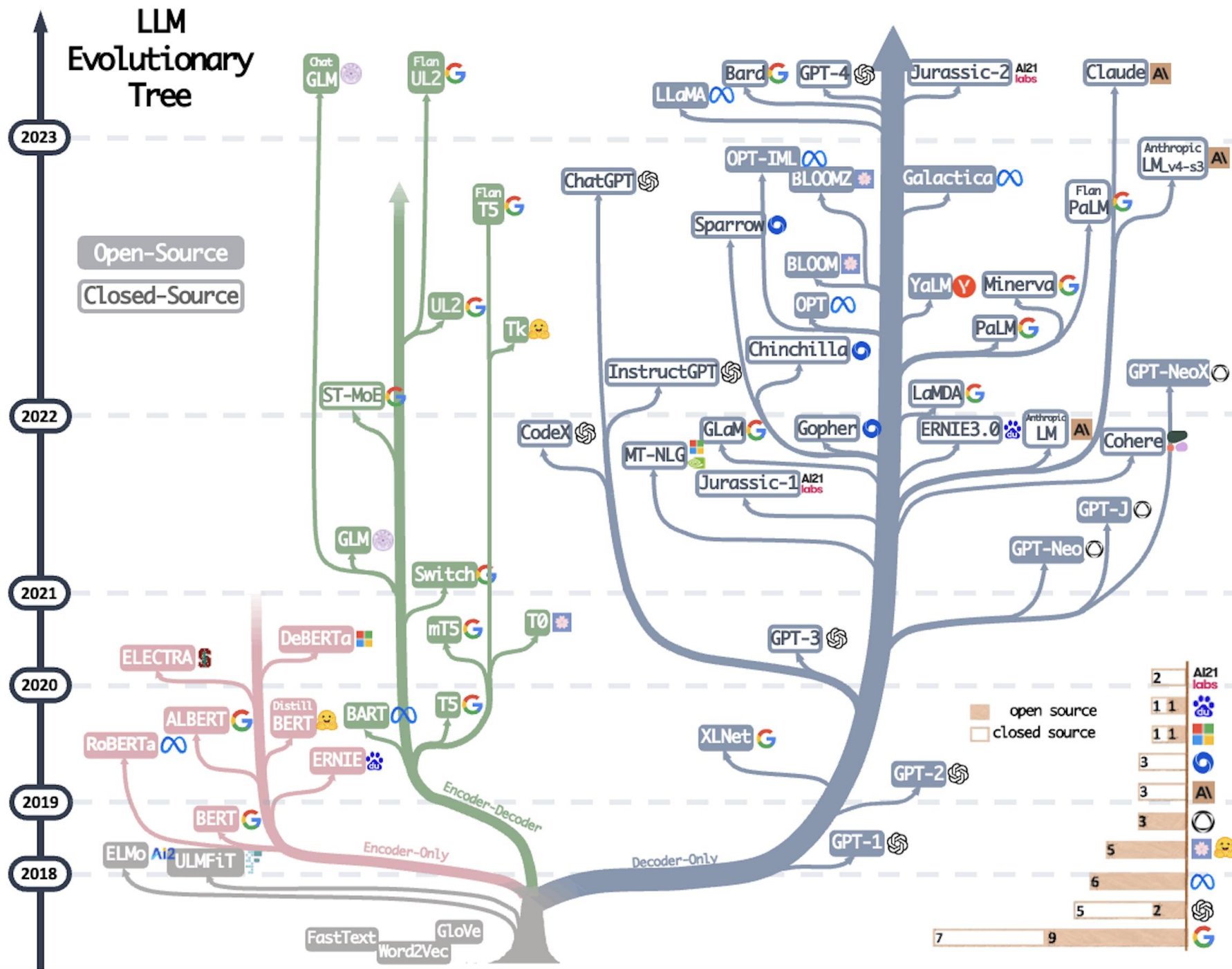
Storytelling Corpora

<https://laramartin.net/resources.html>

<https://huggingface.co/datasets>

What's the difference between:

- encoder-only models
- decoder only models
- encoder-decoder models



Review: What is a foundation model?

A model that captures “foundational” or core information about a modality (e.g., text, speech, images)

Pretrained on a large amount of data & able to be finetuned on a particular task

Self-supervised

All non-finetuned pretrained large language models (LLMs) are foundation models

GPT-3 for Story Generation

The hungry dog licked her lips as she watched her owner eat.

"You've been a good girl," he told her. "I think you deserve a reward."

Once she was done, she jumped back on the couch and waited patiently.

Her owner took a piece of steak out of the fridge and gave it to her.

"Thank you," he said. "I'm glad you're my dog."

She wagged her tail and ate the steak.

"If you're good, you can have a treat later," he said. "But for now, you have to sleep. I have a long day tomorrow."

She nodded and lay down on the floor.

Her owner got up, turned off the lights, and lay down on the bed.

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Remembering Story
State

Commonsense
reasoning

Levels of Information

‘What’s it going to be then, eh?’

There was me, that is Alex, and my three droogs, that is Pete, Georgie, and Dim, Dim being really dim, and we sat in the Korova Milkbar making up our rassoodocks what to do with the evening, a flip dark chill winter bastard though dry. The Korova Milkbar was a milk-plus mesto, and you may, O my brothers, have forgotten what these mestos were like, things changing so skorry these days and everybody very quick to forget, newspapers not being read much neither. Well, what they sold there was milk plus something else. They had no licence for selling liquor, but there was no law yet against prodding some of the new veshches which they used to put into the old moloko, so you could peet it with vellocet or synthemesc or dren crom or one or two other veshches which would give you a nice quiet horror-show fifteen minutes admiring Bog and All His Holy Angels and Saints in your left shoe with lights nursing all over your mozg. ...

Text from *A Clockwork Orange* by Anthony Burgess

The story begins with the droogs sitting in their favourite hangout, the Korova Milk Bar, and drinking "milk-plus" – a beverage consisting of milk laced with the customer's drug of choice – to prepare for a night of ultra-violence.

Summary from Wikipedia

Alex begins his narrative from the Korova, where the boys sit around drinking.

Summary from SparkNotes.com

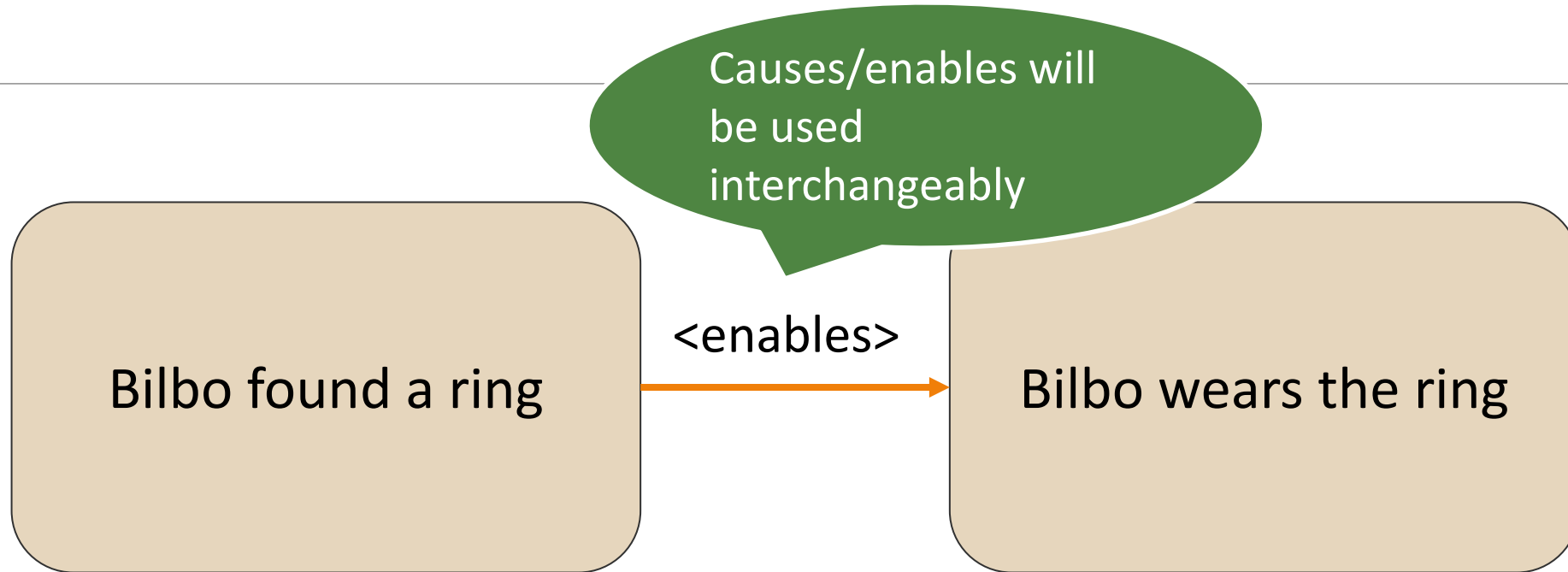
Meena got on a bus.
She fell asleep.
She woke up in New York.

Bilbo joined a group of dwarves on an
adventure.

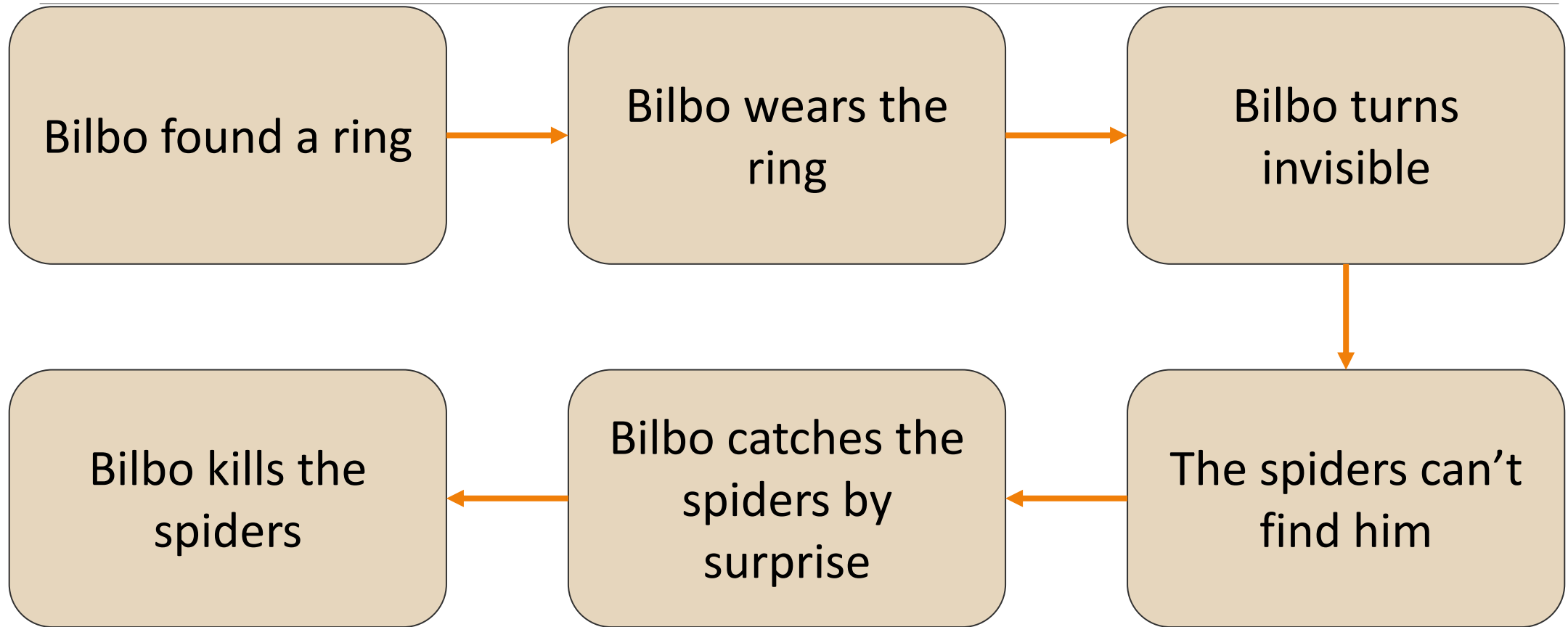
He found a ring in a cave.

He was able to save the dwarves from giant
spiders.

Causal Links



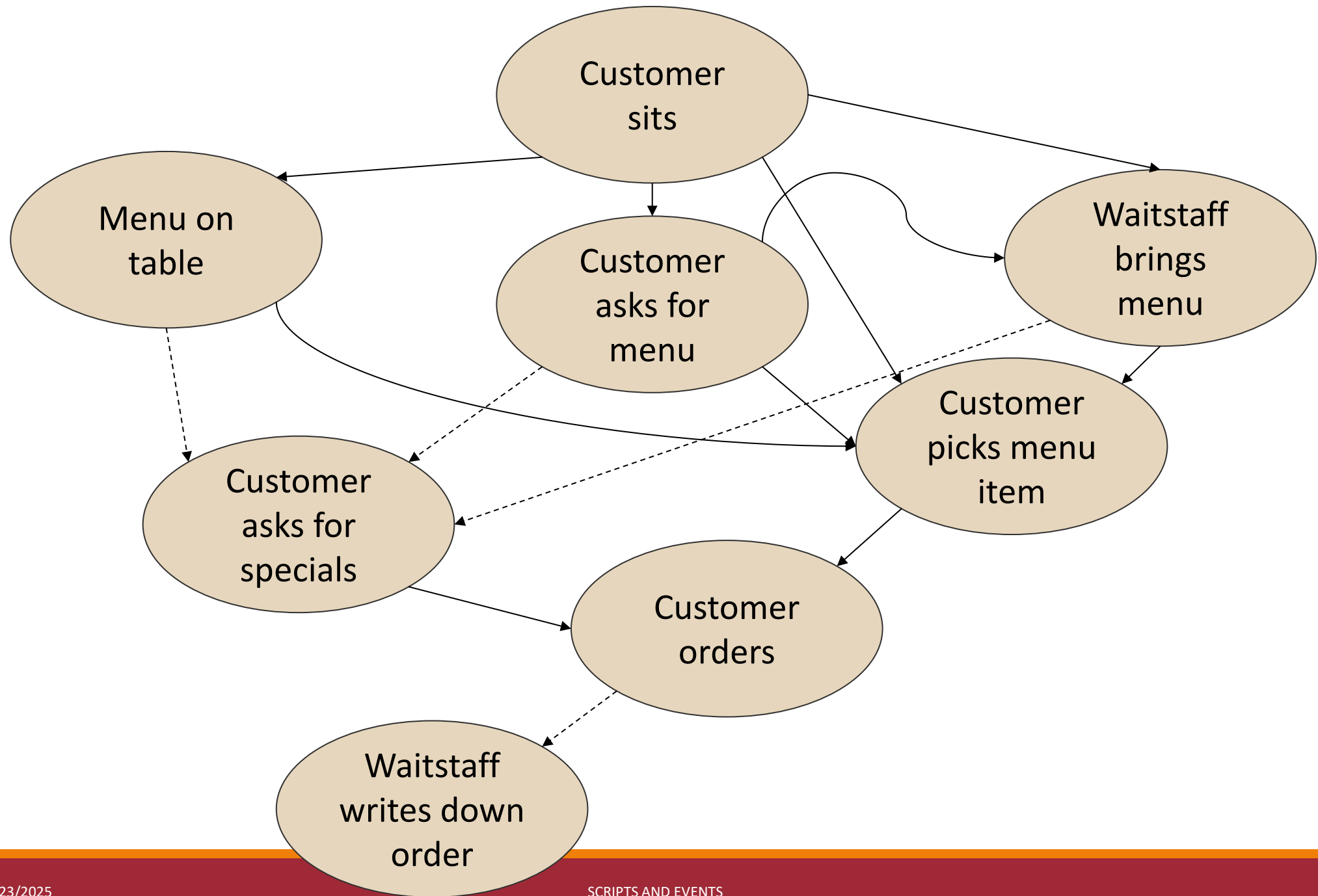
Causal Chains



Script

“A standard event sequence” that

- Lays out different paths/options
- Consists of causal chains
- Can be used to leave out tedious details the reader is expected to know
- Can be considered a literary trope or a common social scenario



Causal Chains vs Scripts

CAUSAL CHAINS

“Sequential flow of events” with cause & effect links between

Might be missing events that are considered “common knowledge”

SCRIPTS

Frequently co-occurring events

The “common knowledge”

Disclaimer: This is the way Schank and Abelson defined them, but sometimes these terms get fuzzy in today’s research, especially because of the use of probabilistic models (further in the lecture)

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Principle of Minimal Departure

“This law—to which I shall refer as the principle of minimal departure—states that we reconstrue the central world of a textual universe in the same way we reconstrue the alternate possible worlds of nonfactual statement: as conforming as far as possible to our representation of [the actual world]”

In other words:

The story world is expected to be like the real world, unless otherwise specified

Or, as Miguel de Cervantes points out...

“The innkeeper asked if he had any money. Don Quixote said that he didn’t have a blanca, because he’d never read in the histories of knights errant that any one of them had taken money with him. To this, the innkeeper said that he was mistaken, because, although the histories didn’t specify something as obvious and necessary as money and clean shirts, there was no reason to believe that they didn’t have them.”

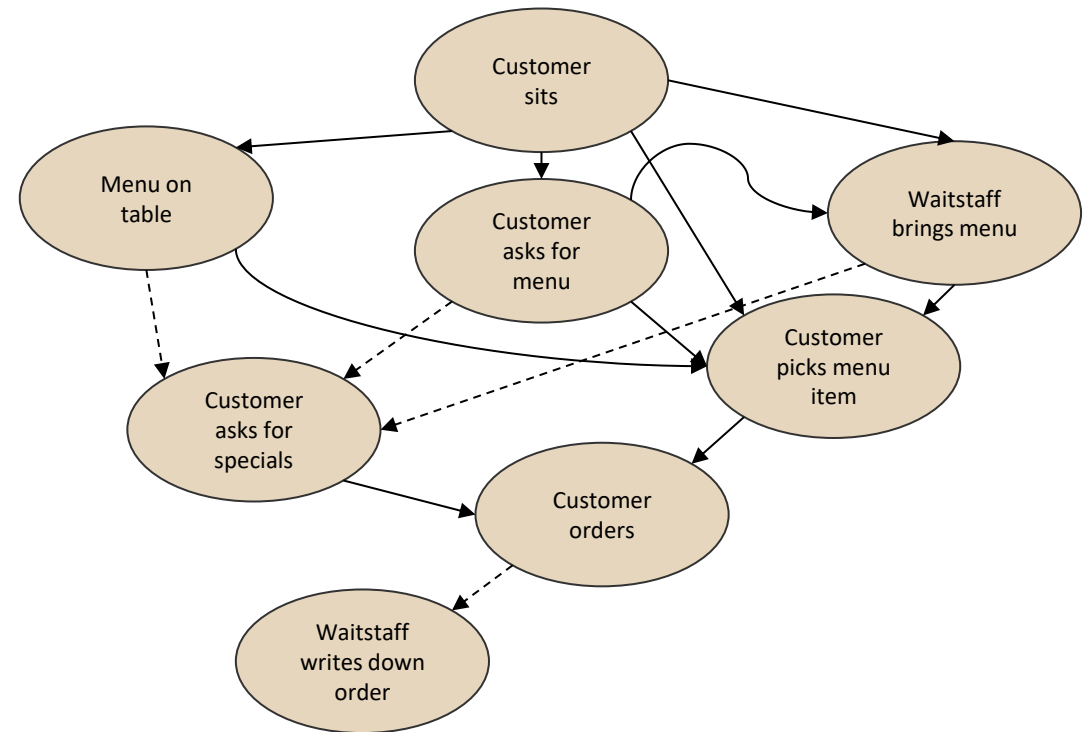
In-Class Activity

Create a small graph to represent the script for **“checking out at a grocery store”**

Use draw.io (or your graph-making software of choice) to make the graph.

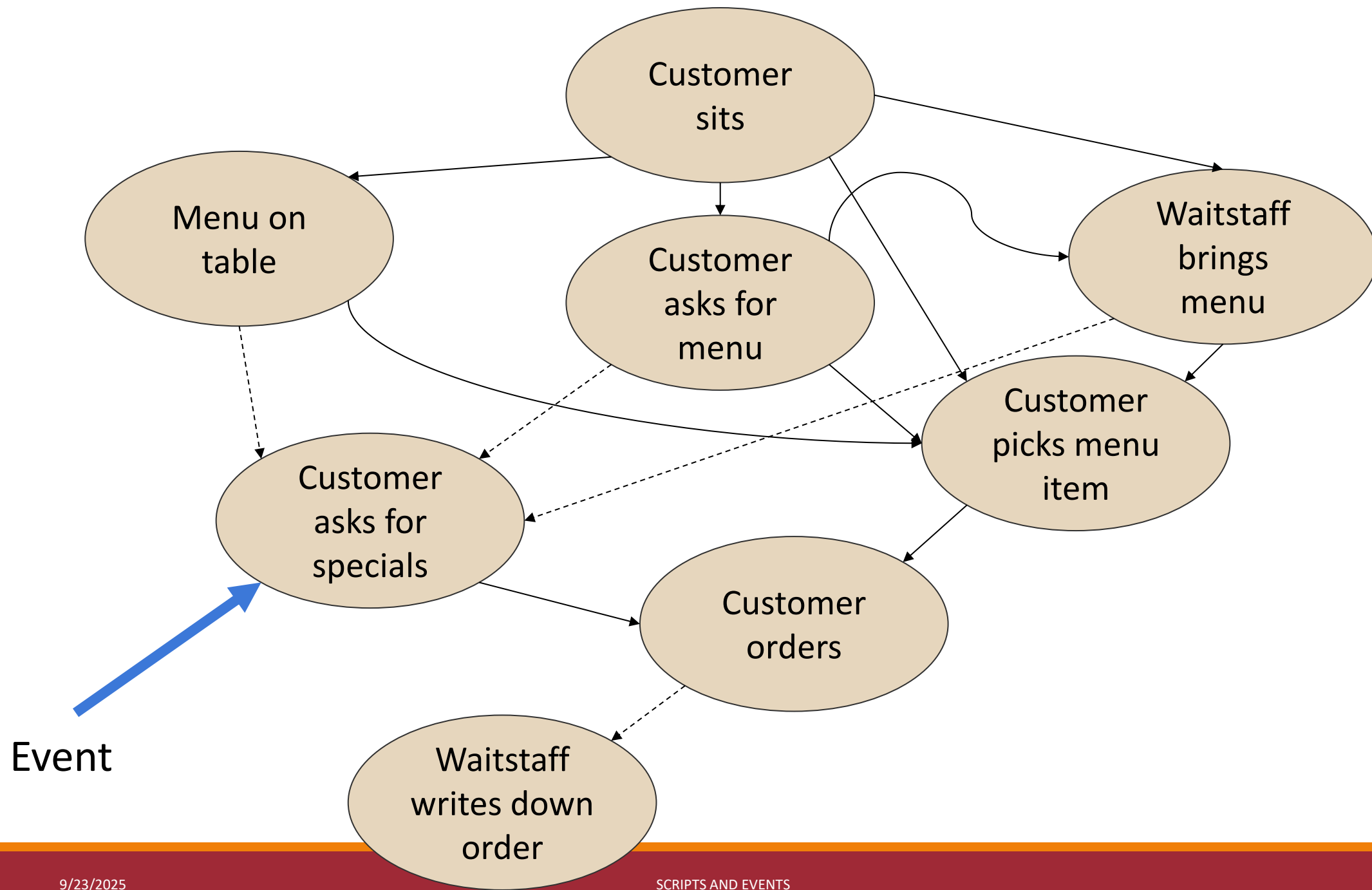
Or if you prefer paper, take a picture of the graph when you’re done.

Submit to Blackboard!



Now that you've gotten your hands dirty

How do you think you would use scripts to generate a story?

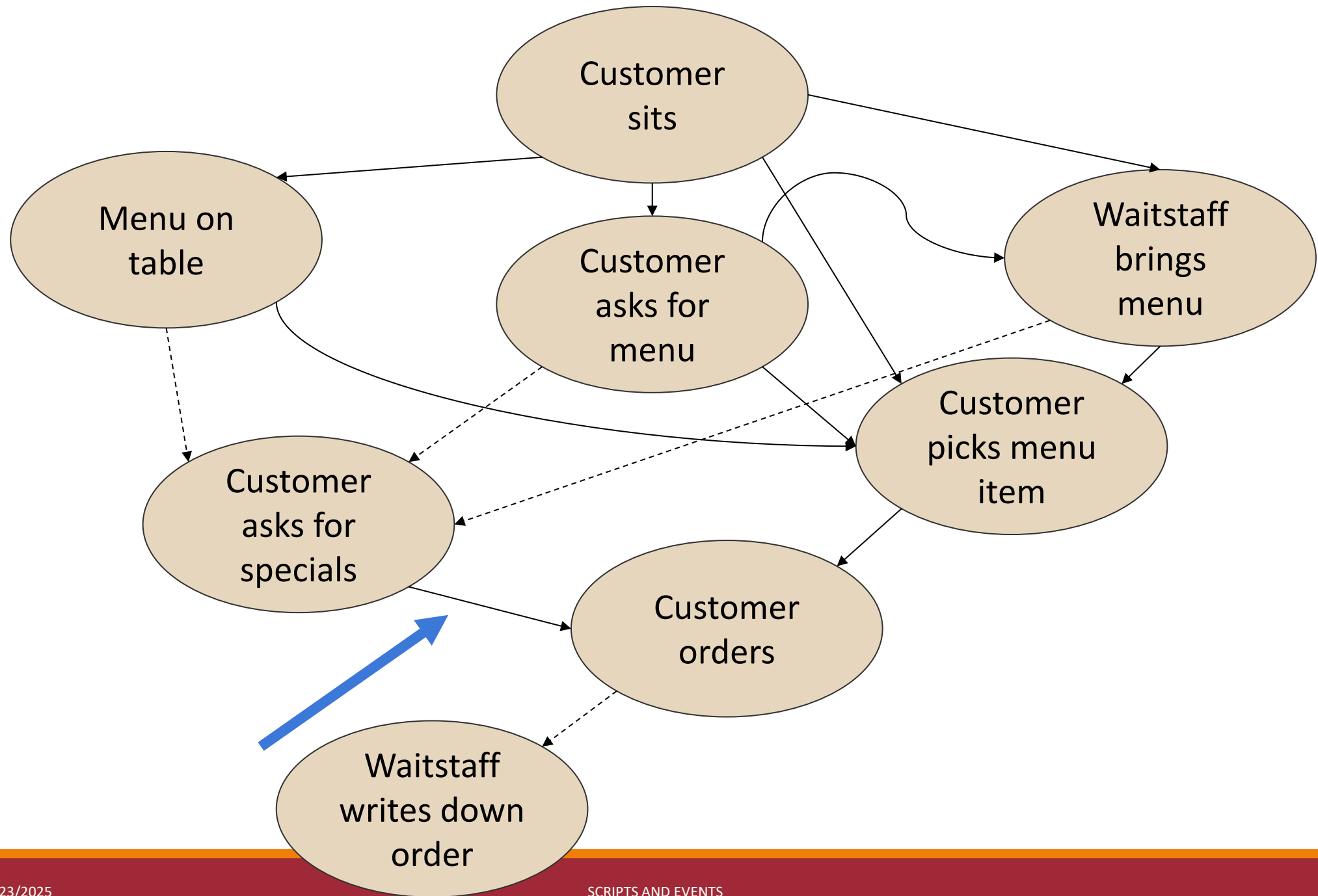


Events

An occurrence that

- has a distinct beginning & end
- may contain multiple actions
 - E.g., “paying the bill” might involve taking out your credit card, handing it over to the staff, etc.
- can be at a variety of levels of granularity
 - E.g. “opens wallet” vs “pays the bill” vs “ate at the restaurant”

In storytelling, we might consider this as something that moves the narrative along
(As opposed to descriptions of people/places: “It was a dark and stormy night...”)

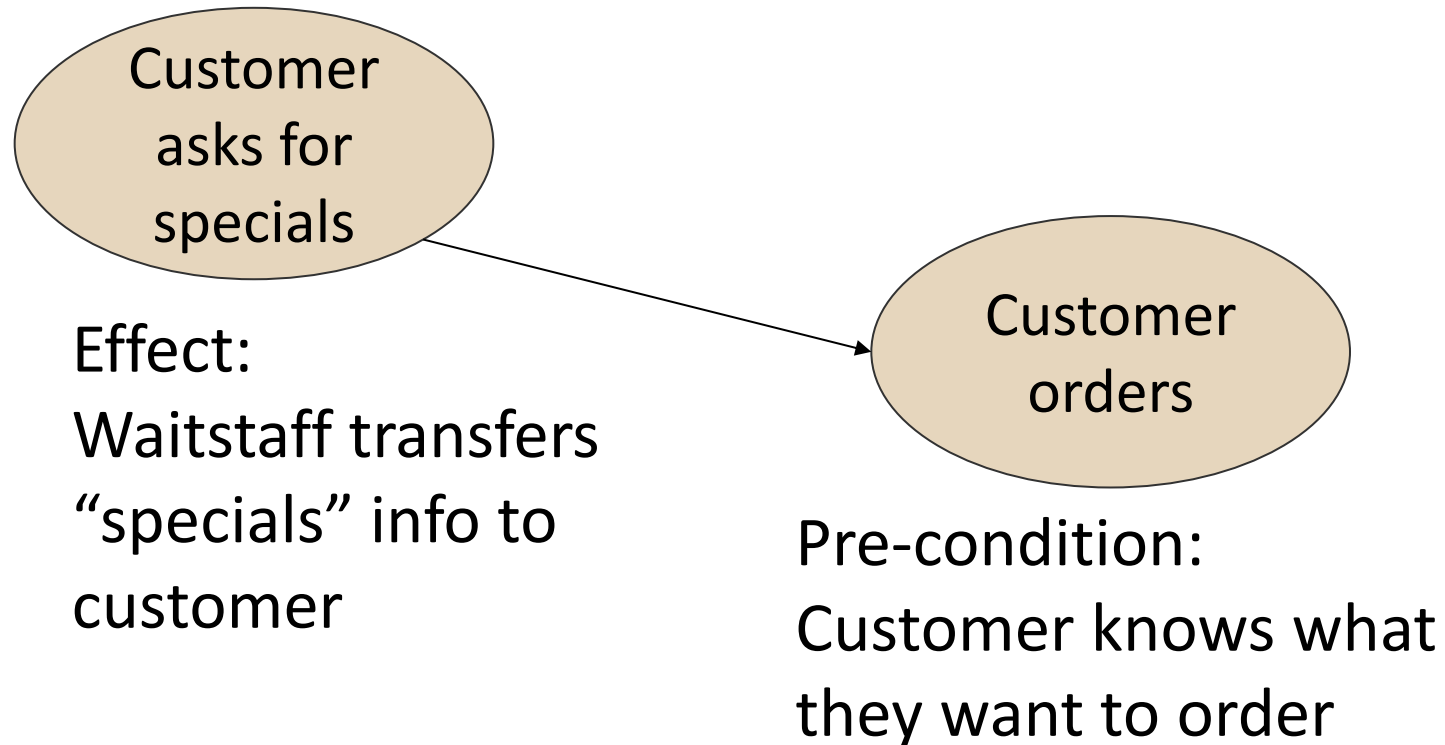


Pre-conditions and Effects

Pre-conditions determine what the state of the world needs to be in before an event is entered

Effects (or post-conditions) tell you what happens after an event occurs

Restaurant Example



Domain

dig(?char,?item)

Precons: ?char alive.
 ?item buried.
 ?char knows ?item.

Effects: ?char has ?item.
 ¬ ?item buried.

Consent: ?char

give(?gvr,?item,?rcvr)

Precons: ?gvr alive.
 ?gvr has ?item.
 ?rcvr alive.

Effects: ?rcvr has ?item.
 ¬ ?gvr has ?item.

Consent: ?gvr ?rcvr

open(?char)

Precons: ?char alive.
 ?char has ?item.

Effects: R opened.
 ¬ ?char alive.

Consent: ?char

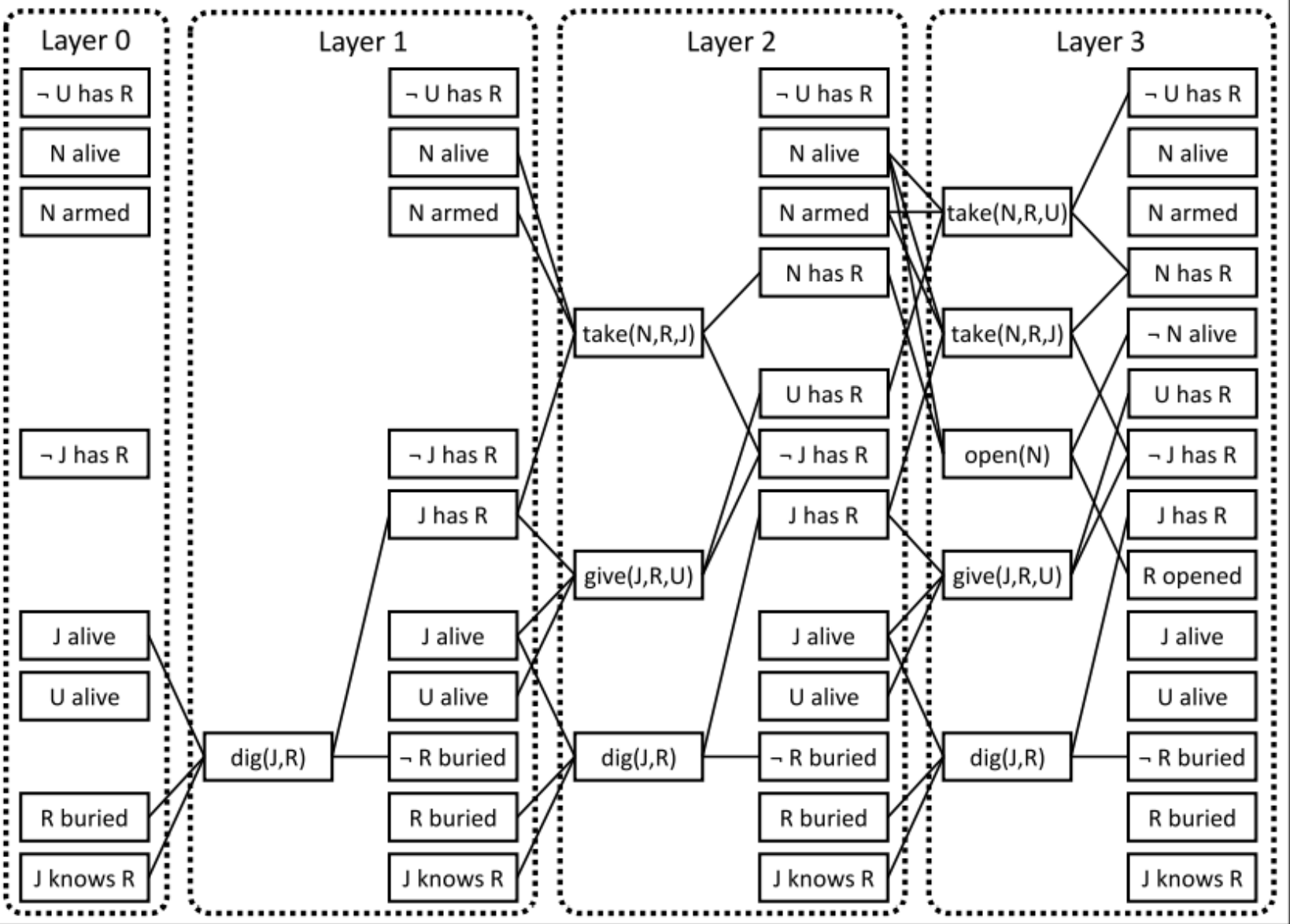
take(?thief,?item,?char)

Precons: ?thief alive.
 ?char has ?item.
 ¬ ?char alive OR
 ?thief armed.

Effects: ?thief has ?item.
 ¬ ?char has ?item.

Consent: ?thief

Plan Graph (from initial state)



Which of the following statements about scripts is FALSE?

✓ 35

Script information is often implied in stories (A)

A script is composed of frequently co-occurring events (B)

For a given scenario, everyone shares the same script (C)

A script is made up of causal chains (D)

Linking Events

PROBABILISTIC

Occur frequently together (not necessarily because they had to)

Example:

I pour dog food in my dog's bowl.

I pet my dog.

CAUSAL

Occur because of one another

Example:

I pour dog food in my dog's bowl.

My dog eats dog food.

Example of a Probabilistic Event Representation

From sentence, extract event representation:

(subject, verb, direct object, modifier, preposition)

Original sentence: yoda uses the force to take apart the platform

Events:

yoda use force ∅ ∅

yoda take_apart platform ∅ ∅

Generalized Events:

<PERSON>0 fit-54.3 power.n.01 ∅ ∅

<PERSON>0 destroy-44 surface.n.01 ∅ ∅

Pros & Cons of Scripts

PROS

Clear, structured

Interpretable

Defined end state

Tailored to the level of detail you want

CONS

More constrained story

Manually created

Assumes everything goes well

Pros & Cons of Scripts (Fall 2024)

PROS

Events – backbone to the story

Enables planning

Don't need to fill-in-the-blanks
(compared to causal chains)

Provides a set of actions

More compact than an LLM

CONS

Limited/rigid/constrained → actions,
domain

Complex & time-consuming to make

Requires a lot of forethought to create

A single voice

Pros & Cons of Scripts (Spring 2022)

PROS

Structured

Interpretable

Logical

Easy to visualize

CONS

Too much effort

Expertise

Fixed/rigid

Lack creativity?