Scripts

MODULE 2 - 9/24/2024
CIS 700 - INTERACTIVE FICTION AND TEXT GENERATION
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Project Proposal

- https://laramartin.net/interactive-fiction-class/homeworks/project/project-proposal.html

- Due Monday, September 30 @ 11:59PM.

Learning Objectives

o Differentiate between a script and causal chains

o Create your own script

o Speculate how scripts can be used in story generation

o Distinguish between causal and probabilistic events

o Identify the strengths and limitations of scripts

Review: 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 drencrom 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.
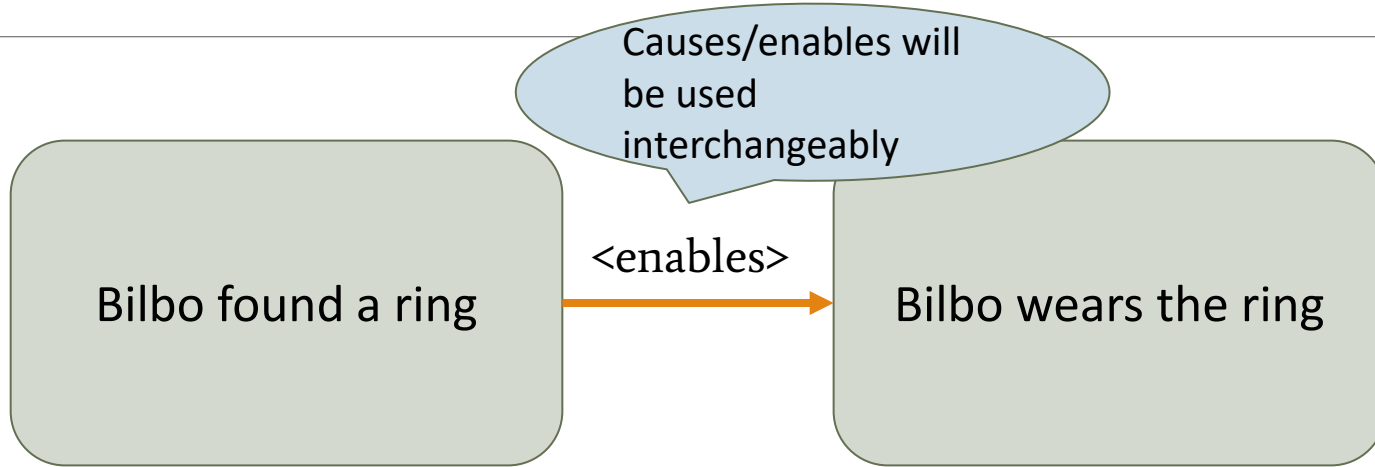
Summary from SparkNotes.com

Meena got on a bus.
She fell asleep.
She woke up in New York.
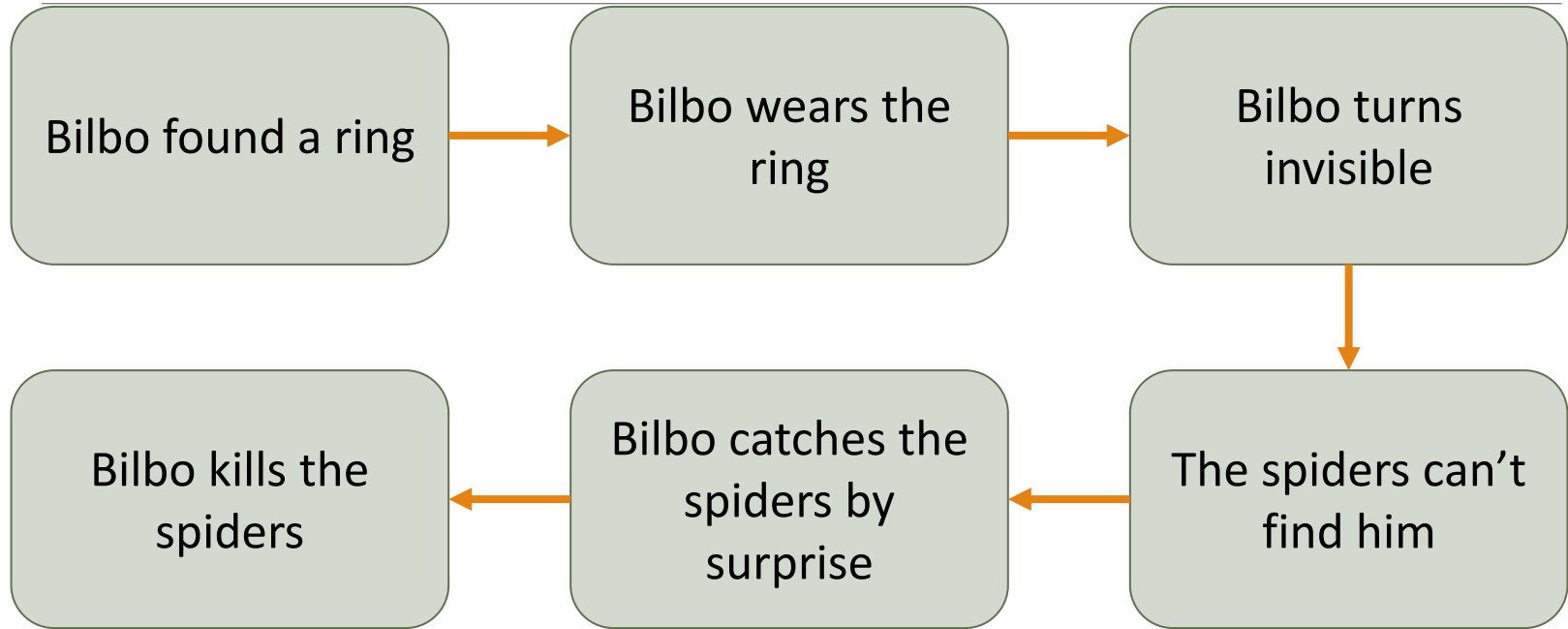
Bilbo joined a group of dwarves on an adventure.
He found a ring in a cave.
He was able to save the dwarves from giant spiders.

Causal Links

Bilbo found a ring <enables>→ Bilbo wears the ring

Causes/enables will be used interchangeably

Causal Chains

Bilbo found a ring → Bilbo wears the ring → Bilbo turns invisible

↓

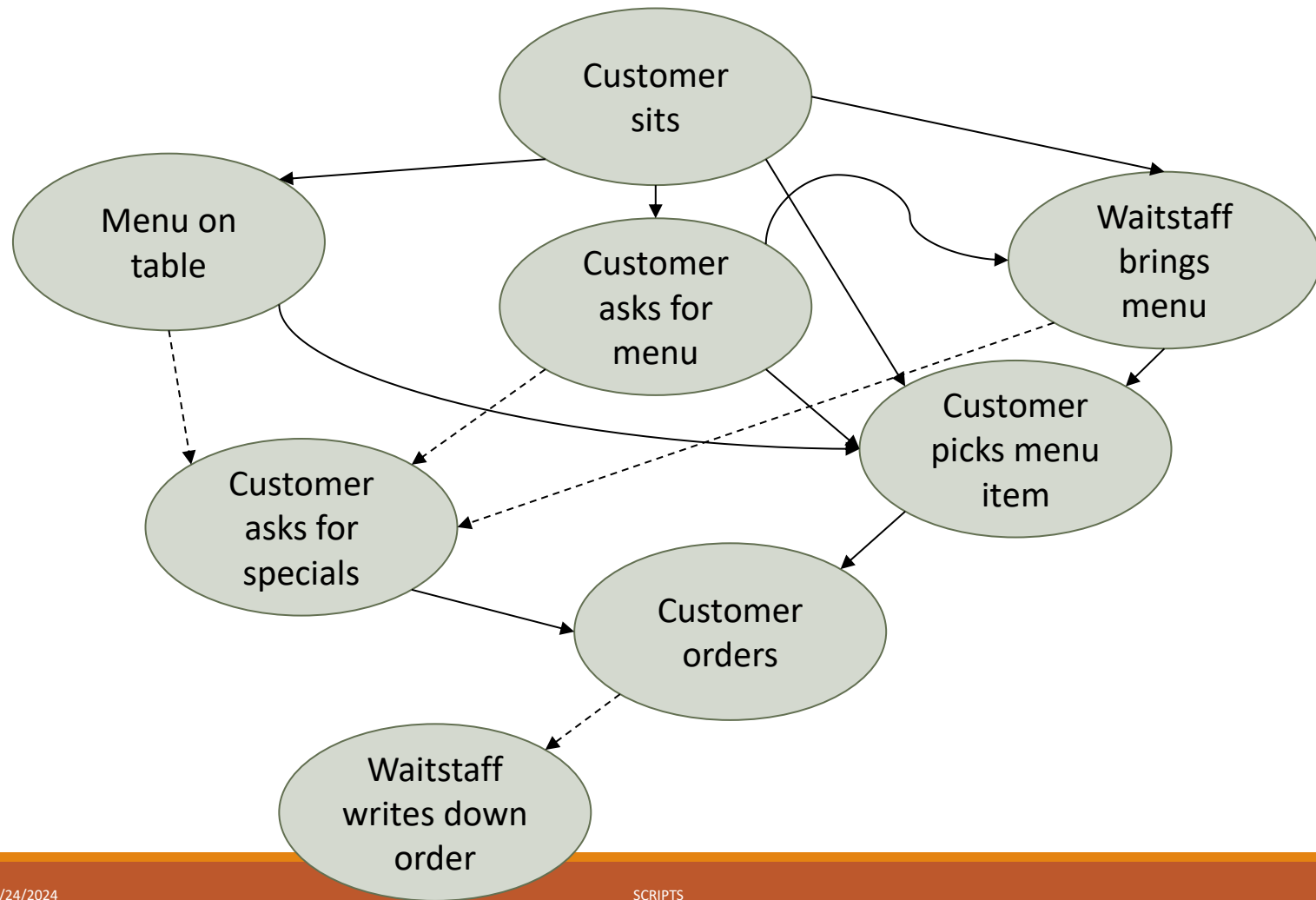Bilbo kills the spiders ← Bilbo catches the spiders by surprise ← The spiders can't find him

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

Schank, R. C., & Abelson, R. P. (1977). In *Scripts, plans, goals, and understanding: An enquiry into human knowledge structures* (The Artificial Intelligence Series, pp. 36–68). Erlbaum.

SCRIPTS

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)

Script

"A standard event sequence" that

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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

Ryan, M.-L. (1991). Chapter 3: Reconstructing the Textual Universe: The Principle of Minimal Departure. In *Possible Worlds, Artificial Intelligence, and Narrative Theory* (pp. 48–60). Indiana Univ. Press.

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."

de Cervantes, M. (1605). Chapter III: In which is recounted the amusing way that don Quixote came to be dubbed a knight. In Don Quixote. Cervantes Project.
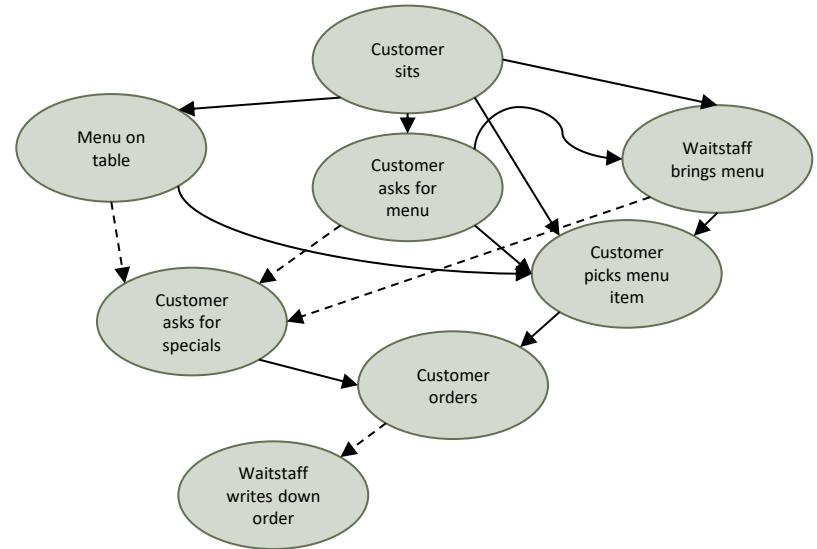
In-Class Activity (15 minutes)

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

Use draw.io to make the graph.

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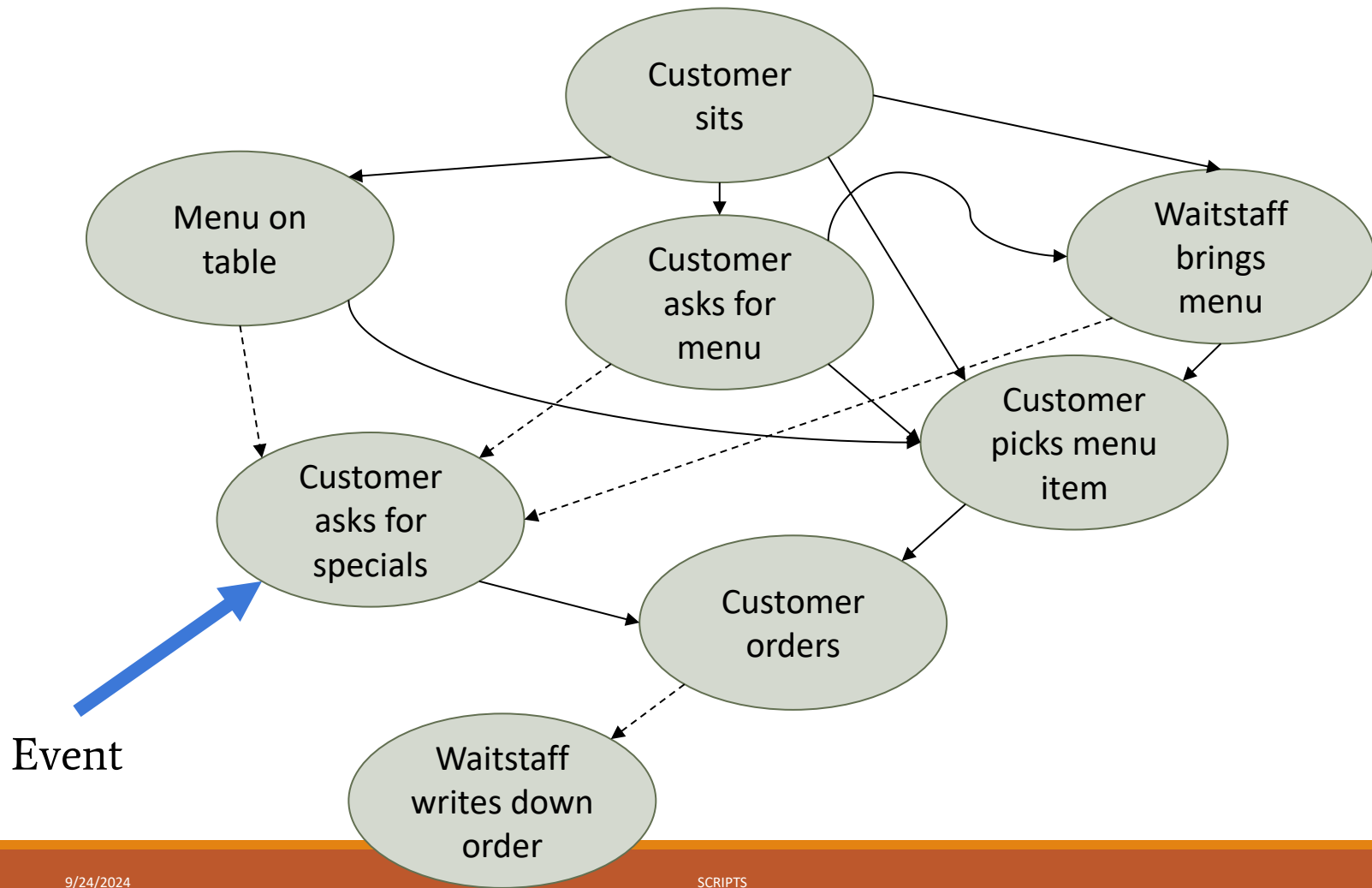
Submit!

https://laramartin.net/interactive-fiction-class/in_class_activities/script_making.html

Now that you've gotten your hands dirty

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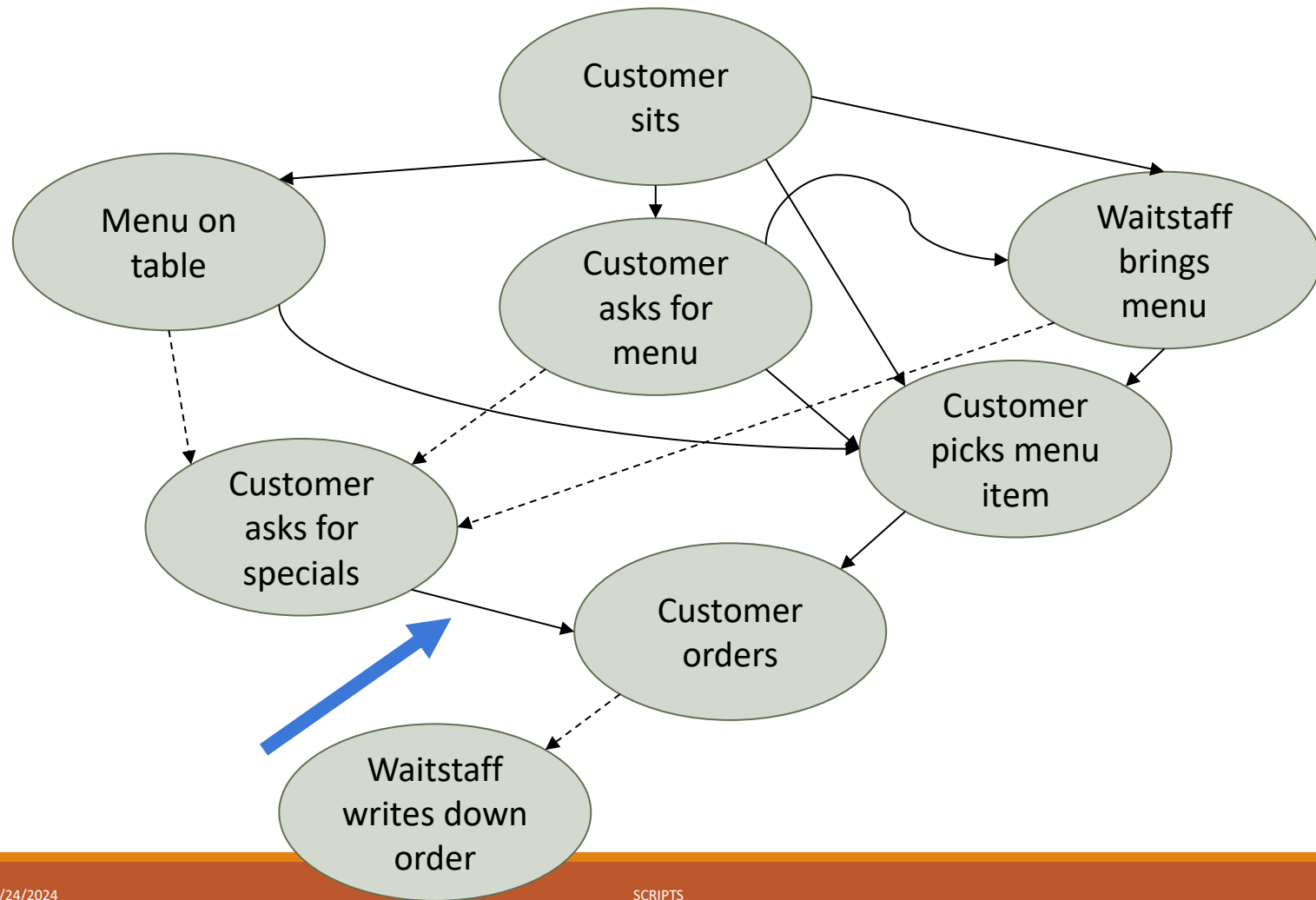
Event

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, they move the narrative along

(As opposed to descriptions of people/places)

Pre-conditions and Effects

o <u>Pre-conditions</u> determine what the state of the world needs to be in before an event is entered

o <u>Effects</u> (or post-conditions) tell you what happens after an event occurs

Restaurant Example

Customer asks for specials

Effect:
Waitstaff transfers "specials" info to customer

Customer orders

Pre-condition:
Customer knows what they want to order
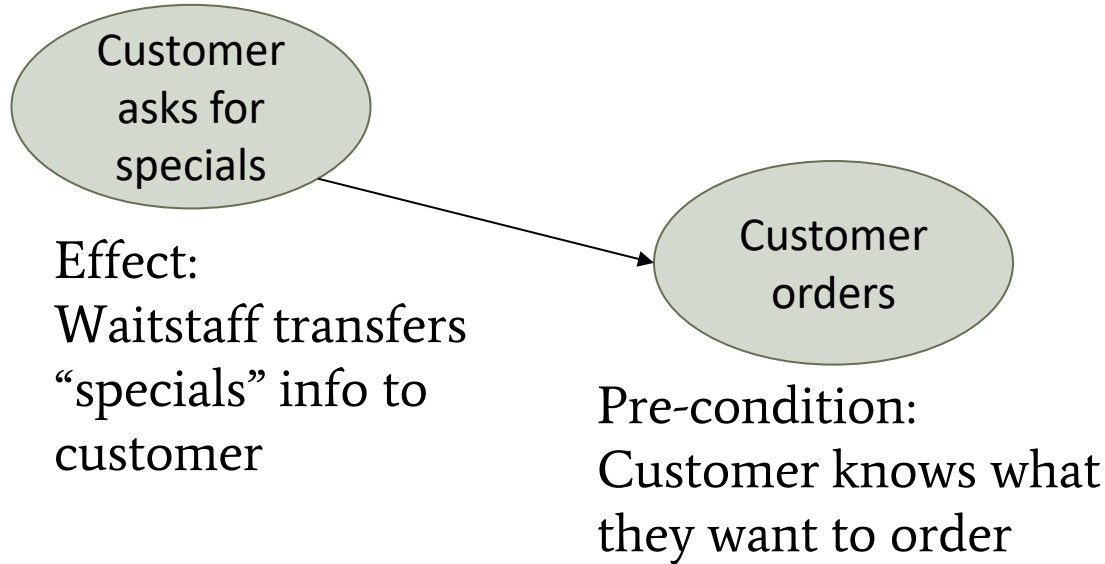
Domain

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.

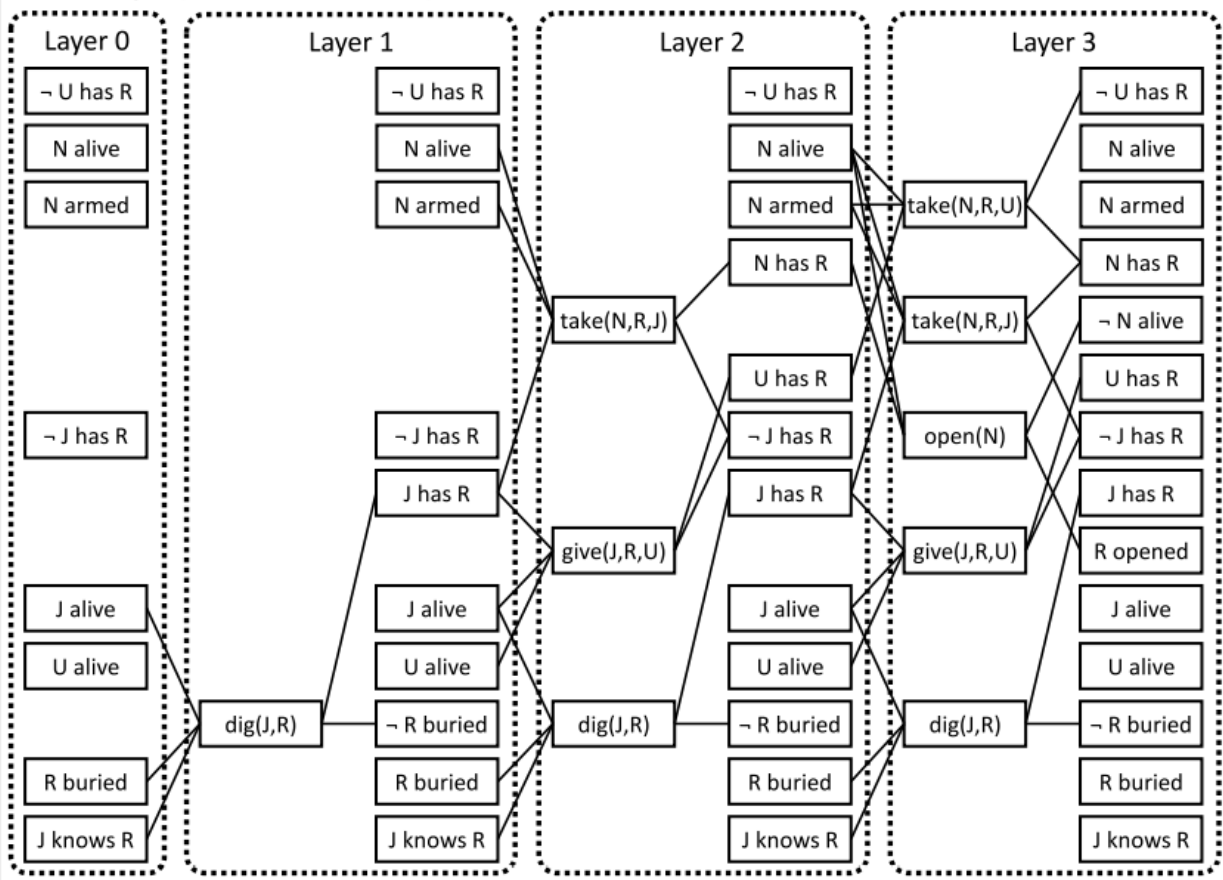Effects: R opened.
¬ ?char alive.

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)

Layer 0

¬ U has R
N alive
N armed

¬ J has R

J alive
U alive

R buried
J knows R

Layer 1

¬ U has R
N alive
N armed

take(N,R,J)

¬ J has R
J has R

dig(J,R)

J alive
U alive
¬ R buried
R buried
J knows R

Layer 2

¬ U has R
N alive
N armed
N has R

take(N,R,J)

U has R
¬ J has R
J has R

give(J,R,U)

dig(J,R)

J alive
U alive
¬ R buried
R buried
J knows R

Layer 3

take(N,R,U)

take(N,R,J)

open(N)

give(J,R,U)

dig(J,R)

¬ U has R
N alive
N armed
N has R
¬ N alive
U has R
¬ J has R
J has R
R opened
J alive
U alive
¬ R buried
R buried
J knows R

Stephen G. Ware and R. Michael Young. 2014. Glaive: a state-space narrative planner supporting intentionality and conflict. In *Proceedings of the Tenth AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment* (*AIIDE'14*). AAAI Press, 80–86.

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

CONS