6.1040: Software *Design*

Arvind Satyanarayan & Max Goldman

(with slides from Daniel Jackson)

What does ChatGPT mean for the future of programming?

sentiments.ts | write_sql.go | parse_expenses.py | addresses.rb

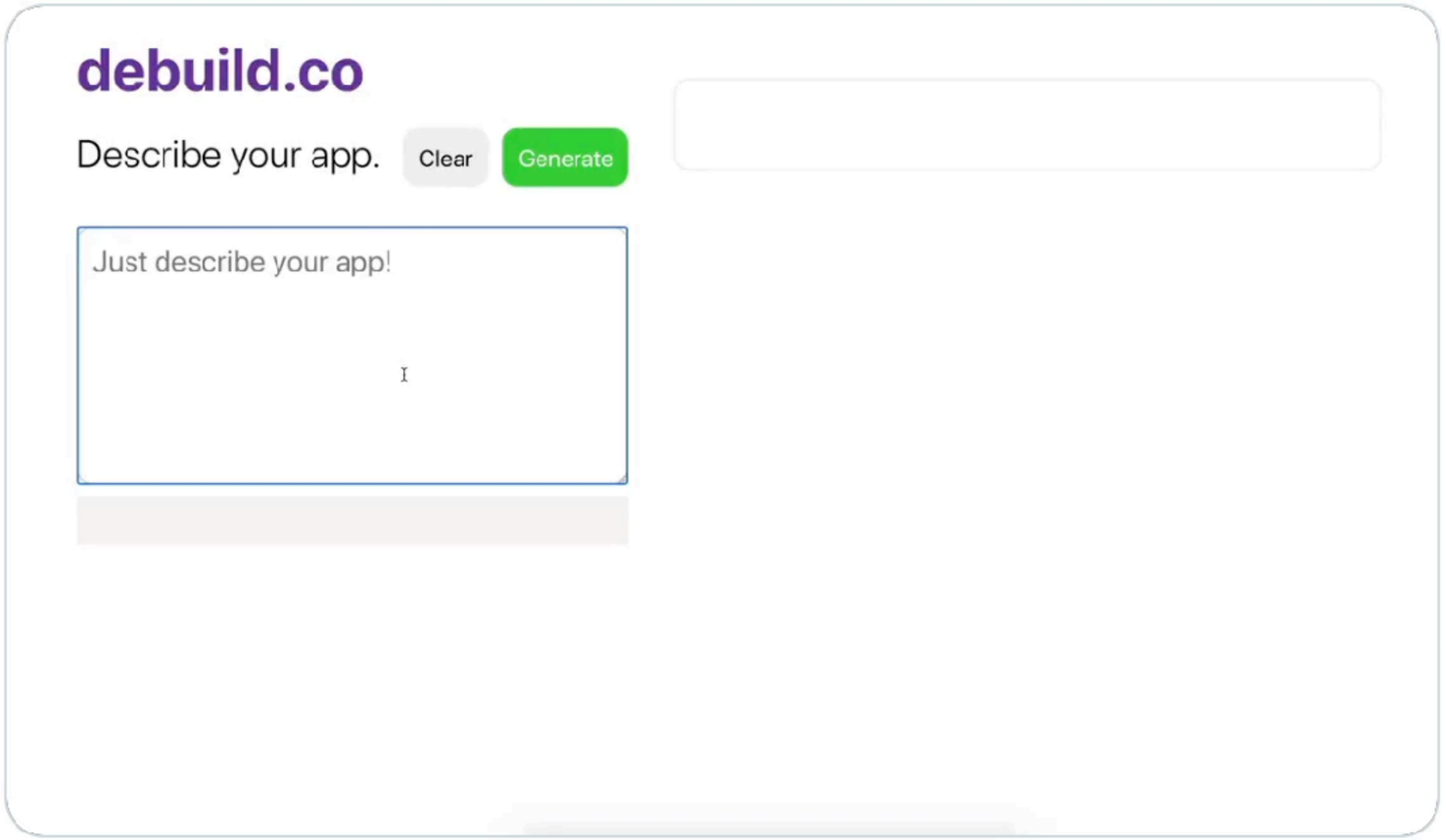
```
#!/usr/bin/env ts-node

import { fetch } from "fetch-h2";
```

Sharif Shameem
@sharifshameem

I just built a *functioning* React app by describing what I wanted to GPT-3.

I'm still in awe.

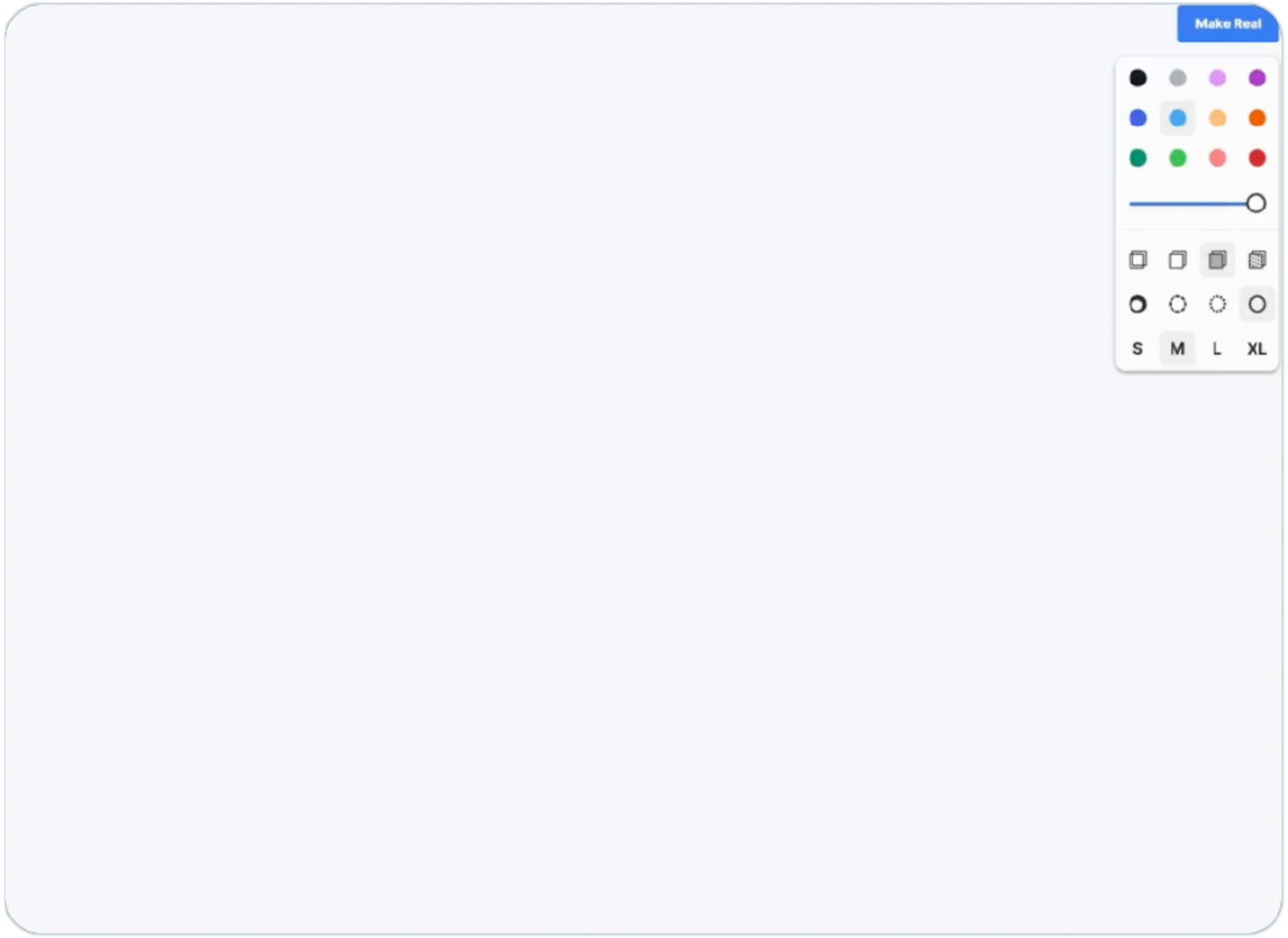


7:58 AM · Jul 17, 2020

Post

Kevin Cannon
@multikev

I think I need to go lie down.



So...
what's the point of a class on full stack web dev?

This class isn't *just* about software *engineering*

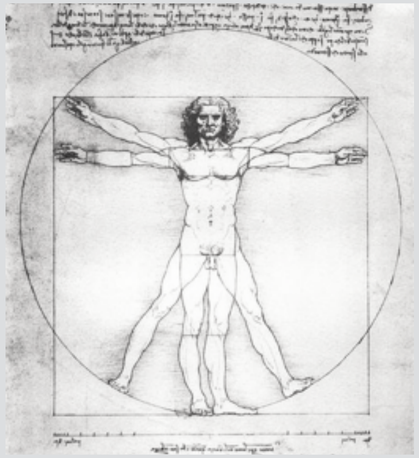
This class is also about software *design*

This class isn't *just* about software *engineering*

What's the difference?

This class is also about software *design*

levels of UX design



physical

color, size, layout,
type, touch, sound

eg: Fitts' Law, accessibility

linguistic

icons, labels, tooltips,
site structure

example: consistent icons

conceptual

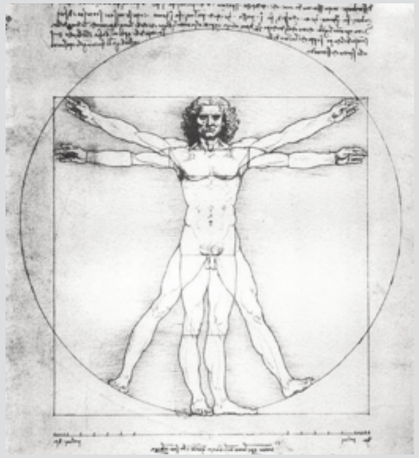
semantics, actions,
data model, purpose

example: good mental model

concrete

abstract

levels of UX design



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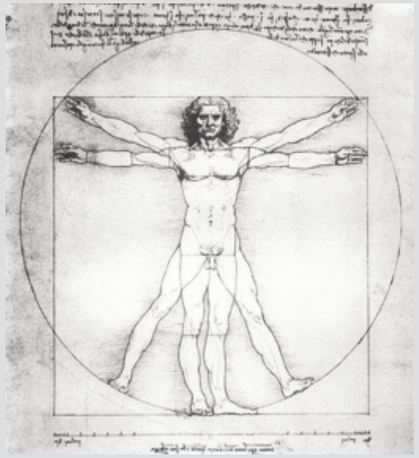

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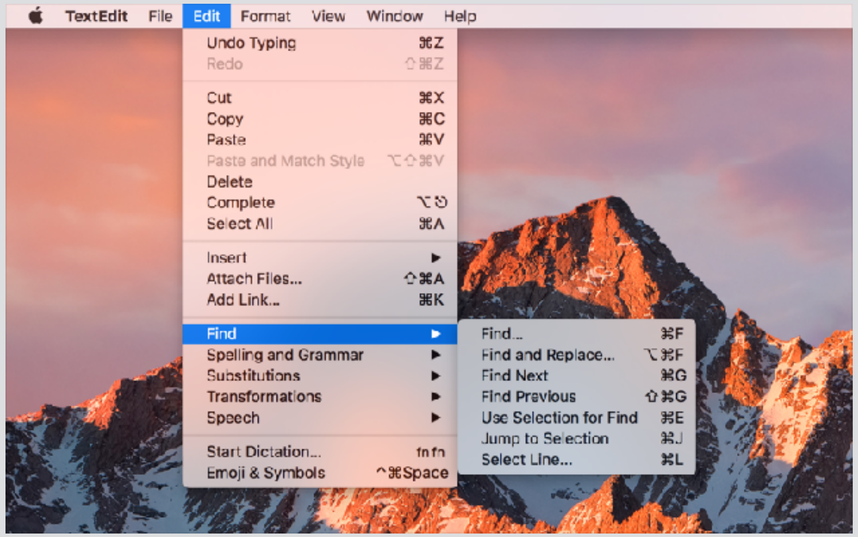

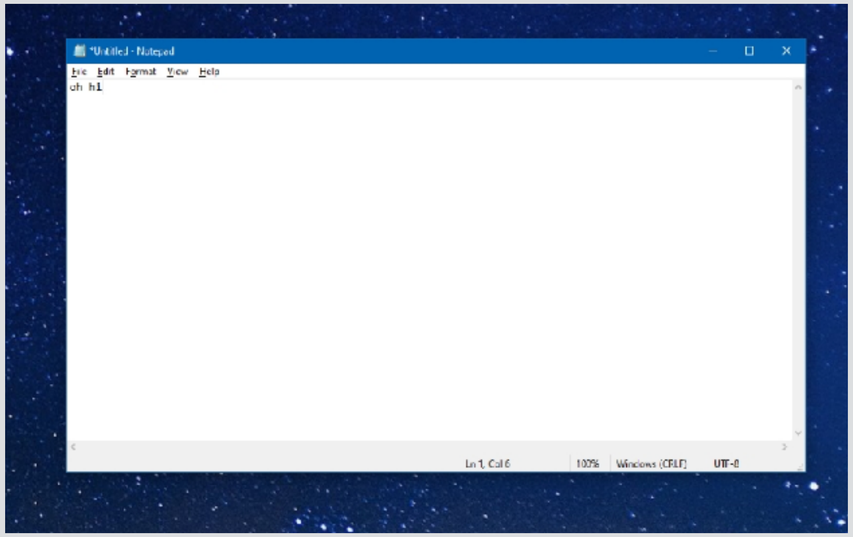

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★ 2020 ★

Home | Senate | House | Governor | States | Polls | Live Blog | My Races | Margin of Victory | Probability Meters

Presidential Election Results | Senate Balance Of Power | House Balance Of Power | Presidential Race by State

Presidential Election Results

Joe Biden
Kamala Harris
306

Donald Trump
Mike Pence
232

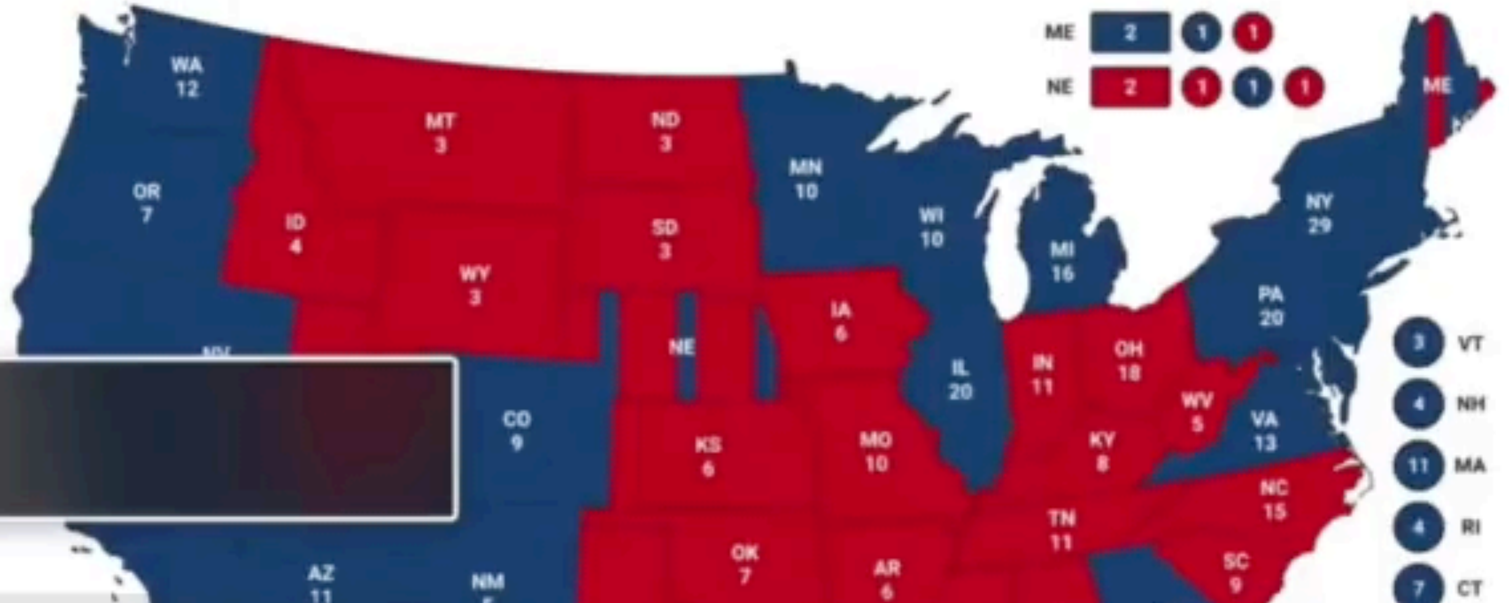
81,283,495 votes (51.4%)

270 NEEDED TO WIN

74,223,755 votes (46.9%)

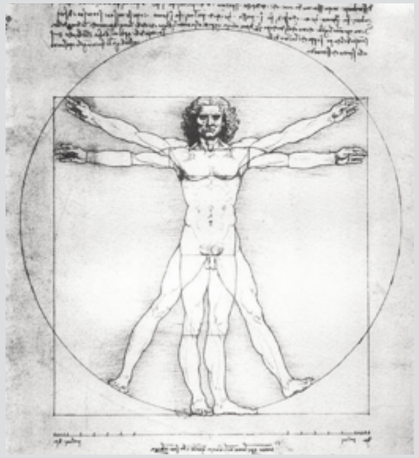
2020 Live

States | Counties



10 votes

levels of UX design



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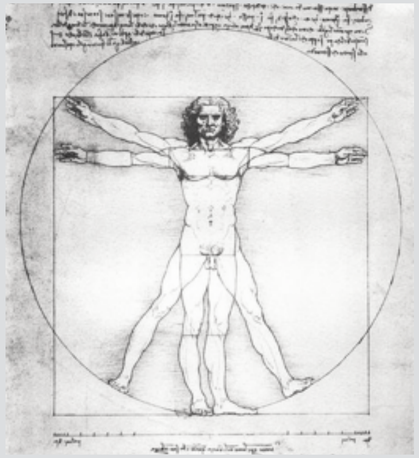

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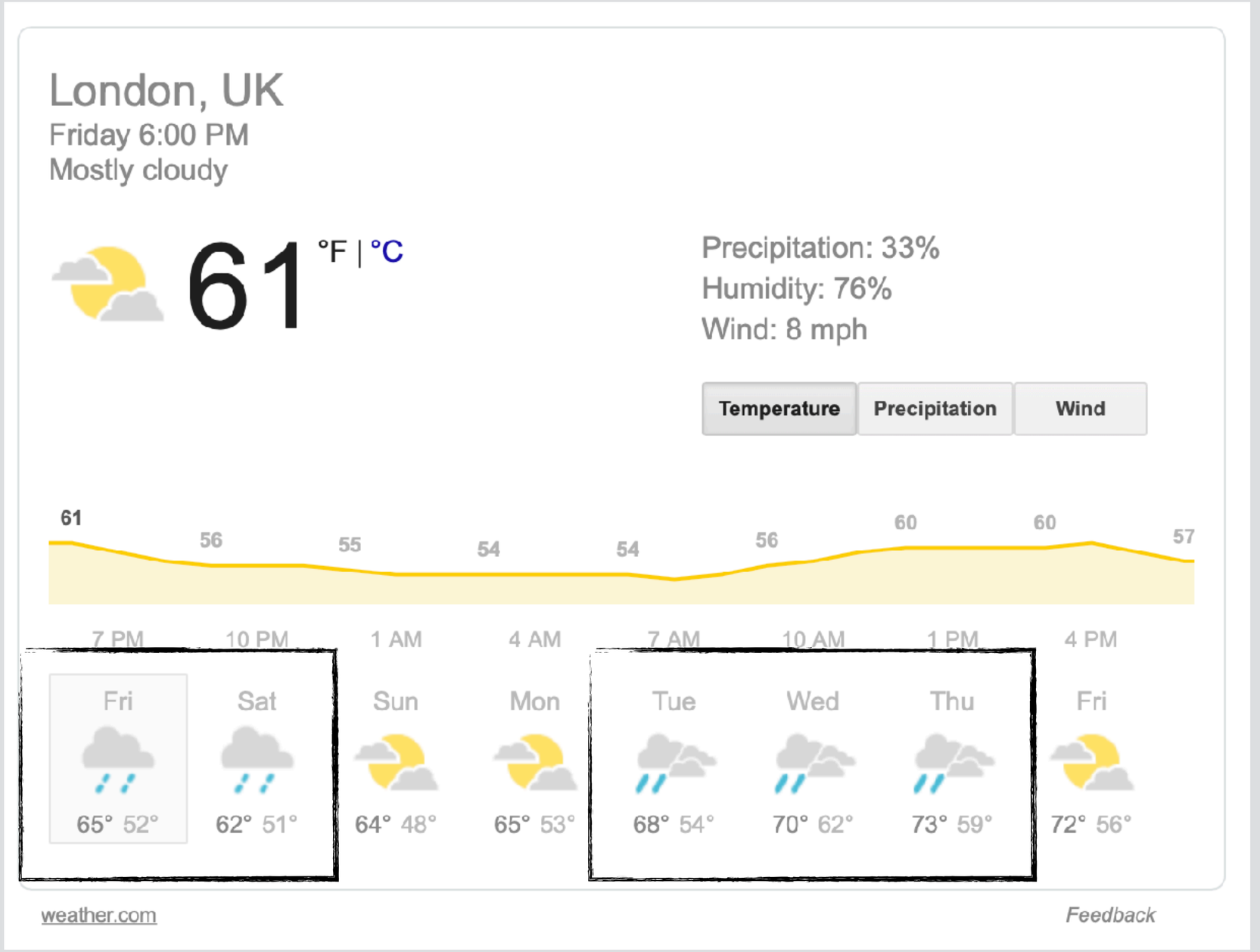

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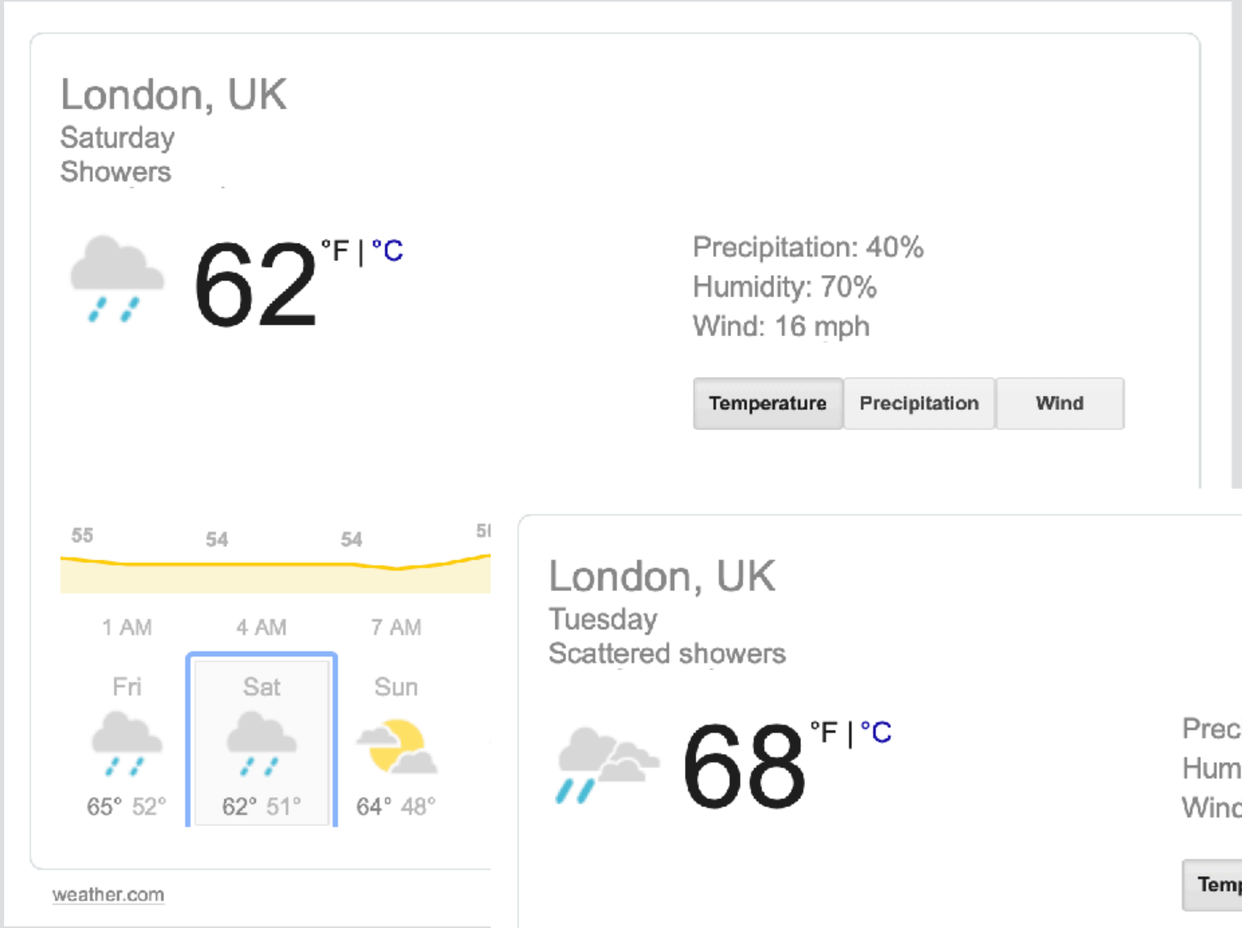

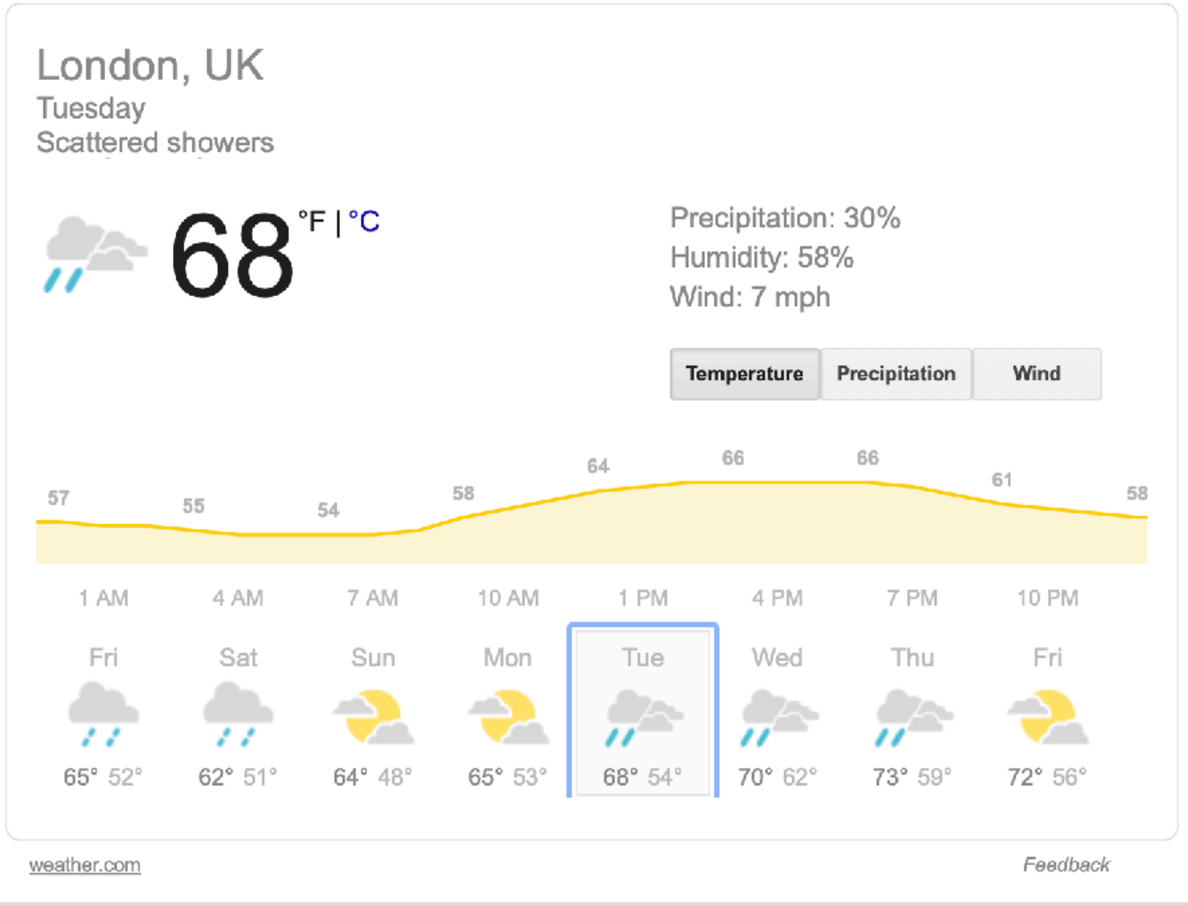

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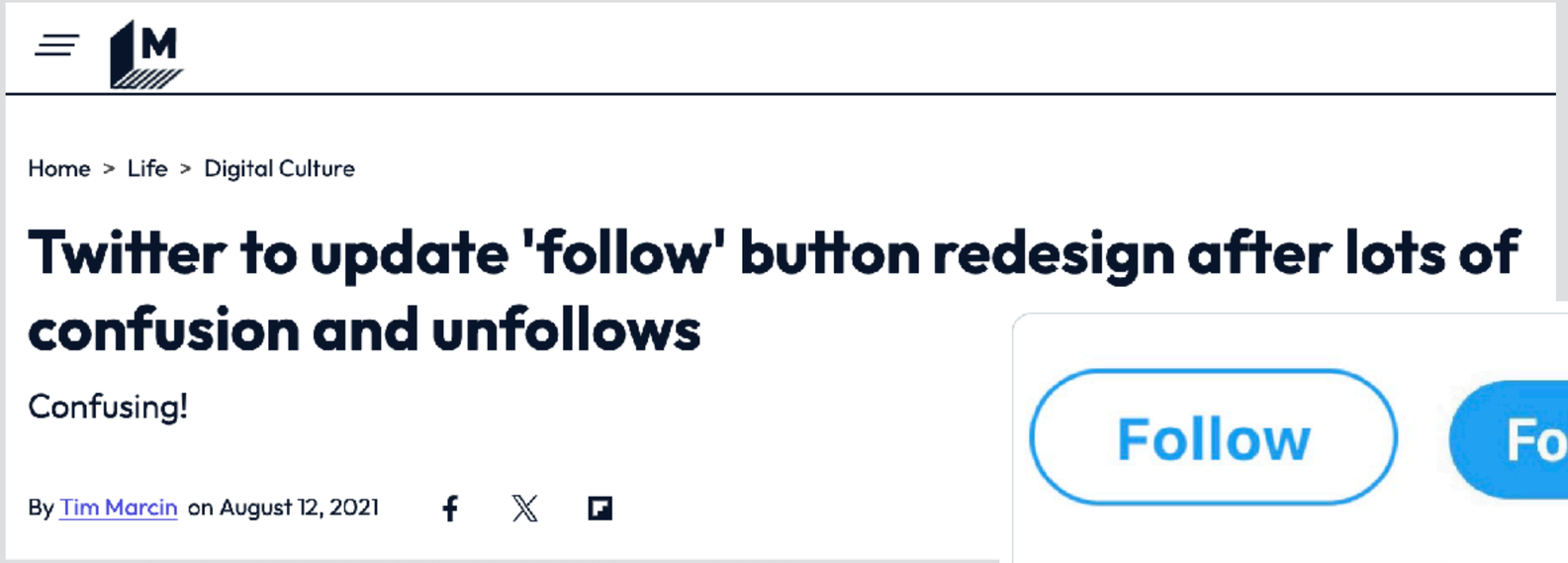

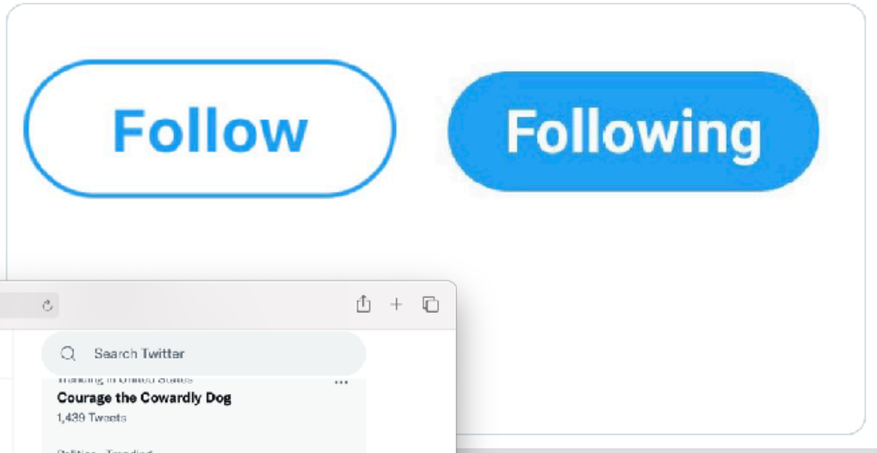

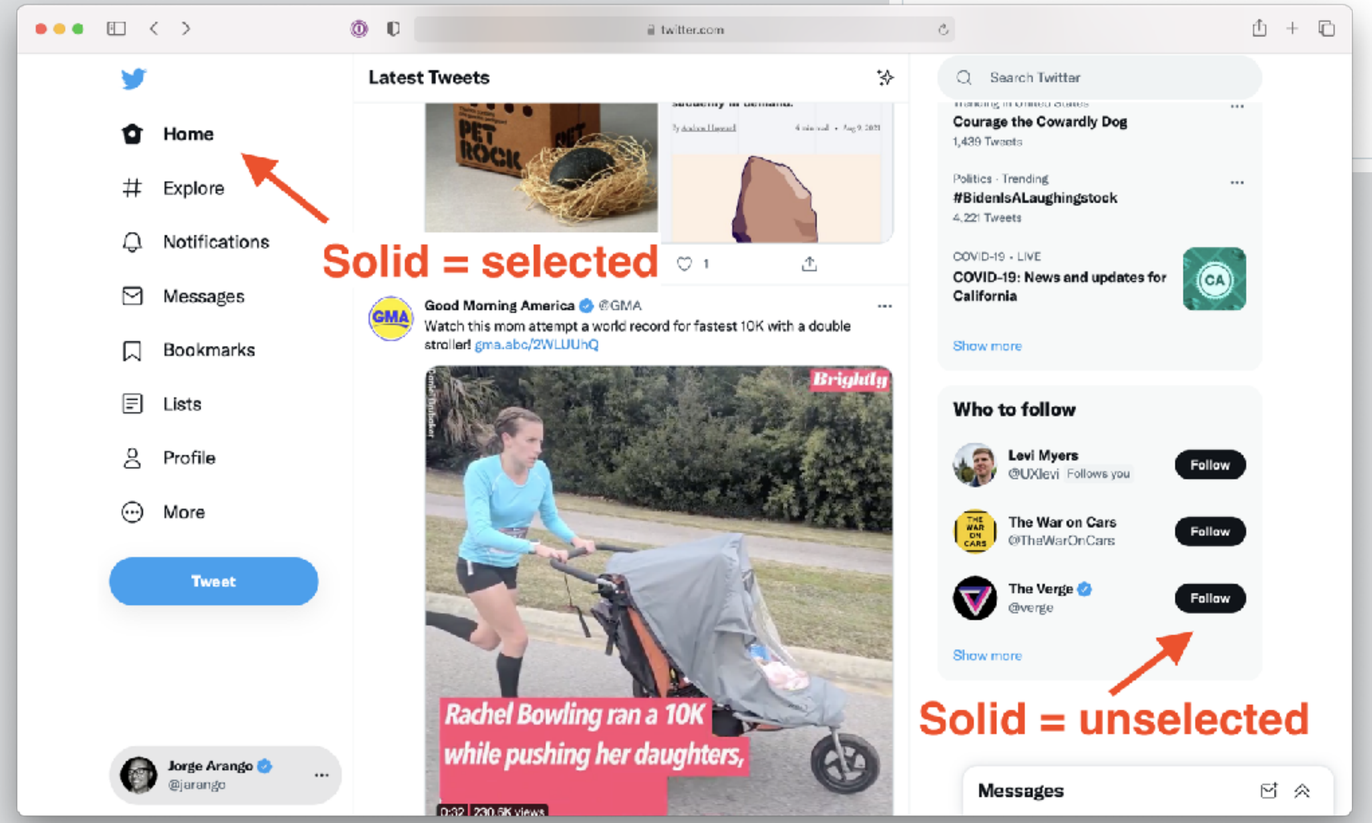

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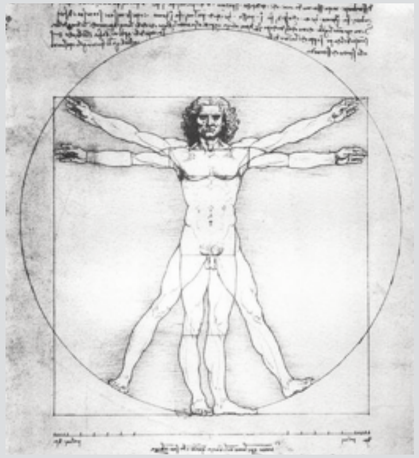

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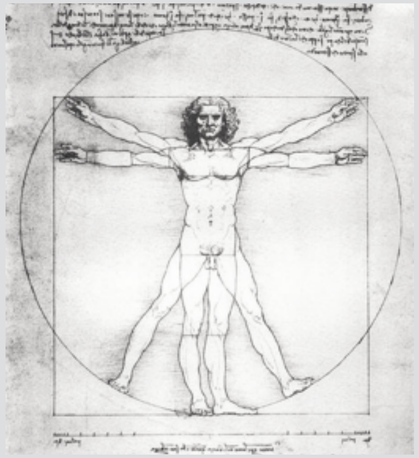

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Not Secure — googledrivesucks.com

Google Drive Sucks

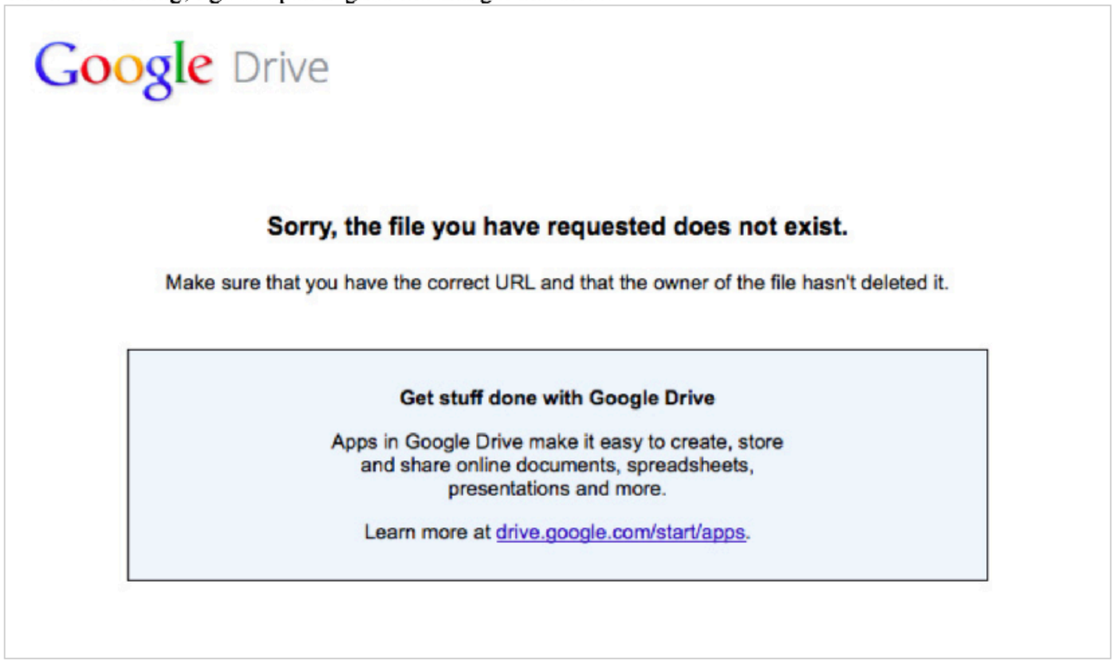
Google Drive storage loses Google Docs data

I lost years of work and personal memories that I saved as Google Docs files because of a poor user interface.

What happened

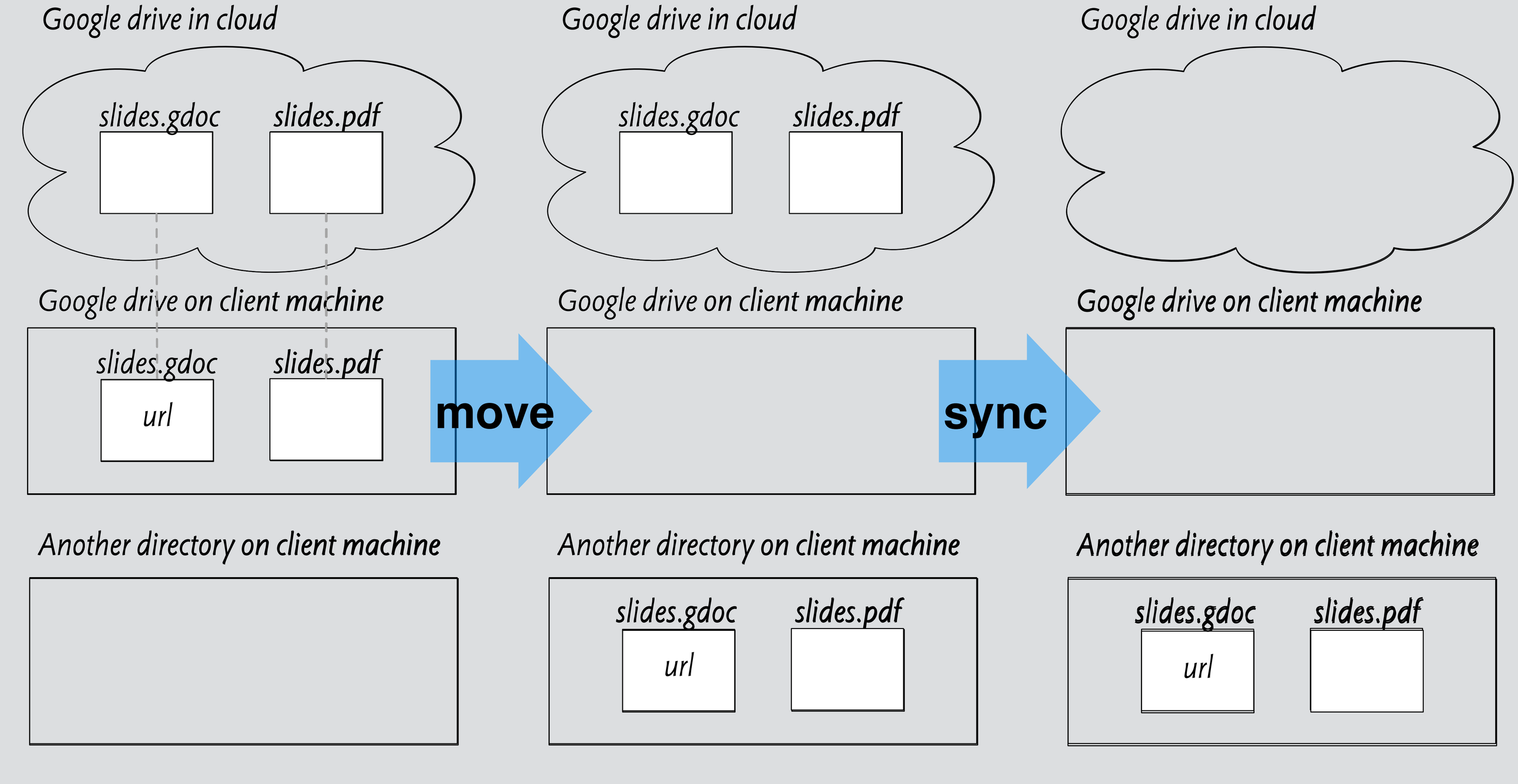
I was organizing my files on my local computer. I moved them around and out of my Google Drive folder which syncs files. I didn't think anything of it. In the process I got an email from Google saying I'm running out of storage. So I go to the Google Drive site and empty the trash. I didn't think anything of it. I finish organizing my files.

The next morning, I go to open a .gdoc file and get this error:



My heart sank. What happened to the work from yesterday? I opened another file. Then another. All of them the same message. I was starting to freak out.

sync concept doesn't behave according to conventional design



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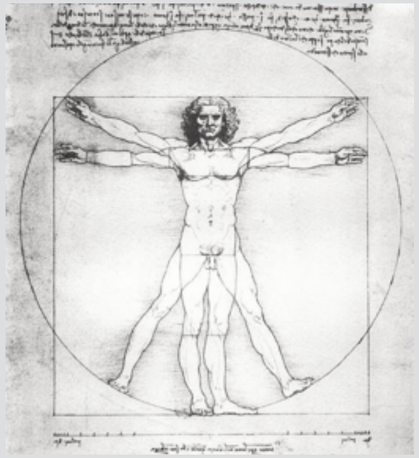

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INTERLUDE
Course Admin

Your Teaching Team

Lecturers

Arvind Satyanarayan

Max Goldman

Lyel Resner (Guest Lecturer)

TAs

Dana Hua

Peilin Chen

Naomi Kirimi

Sophia Zheng

Course Logistics

Schedule

Lectures: MW230-4, *required*
Recitations: Thursdays, *recommended*
Office Hours: throughout the week

Website

http://61040-fa24.github.io

Discourse Forum

http://61040-forum.csail.mit.edu

Q&A, discussions about class material, design ideas/critiques.
Sign up for an account.

Class Contributions (10%)

Constructive ways that benefit your classmates (e.g., blog posts, critiques, forum Q&A, etc.)

Team Project (25%)

Identify a problem, design and implement an app to address it.

Individual Assignments (60%)

Design and implement your own (small, scoped) social media app

Preps (5%)

Short weekly exercises to help you prepare for recitation or lecture.

Graded as *check-offs*.

Course Logistics

Schedule

Lectures: MW230-4, *required*
Recitations: Thursdays, *recommended*
Office Hours: throughout the week

Technology Policy (in lectures)

Please, no laptops or phones in lecture.
iPads are a-okay.

Website

http://61040-fa24.github.io

Discourse Forum

http://61040-forum.csail.mit.edu

Q&A, discussions about class material, design ideas/critiques.
Sign up for an account.

END INTERLUDE

Course Admin

This is a class about software *design*

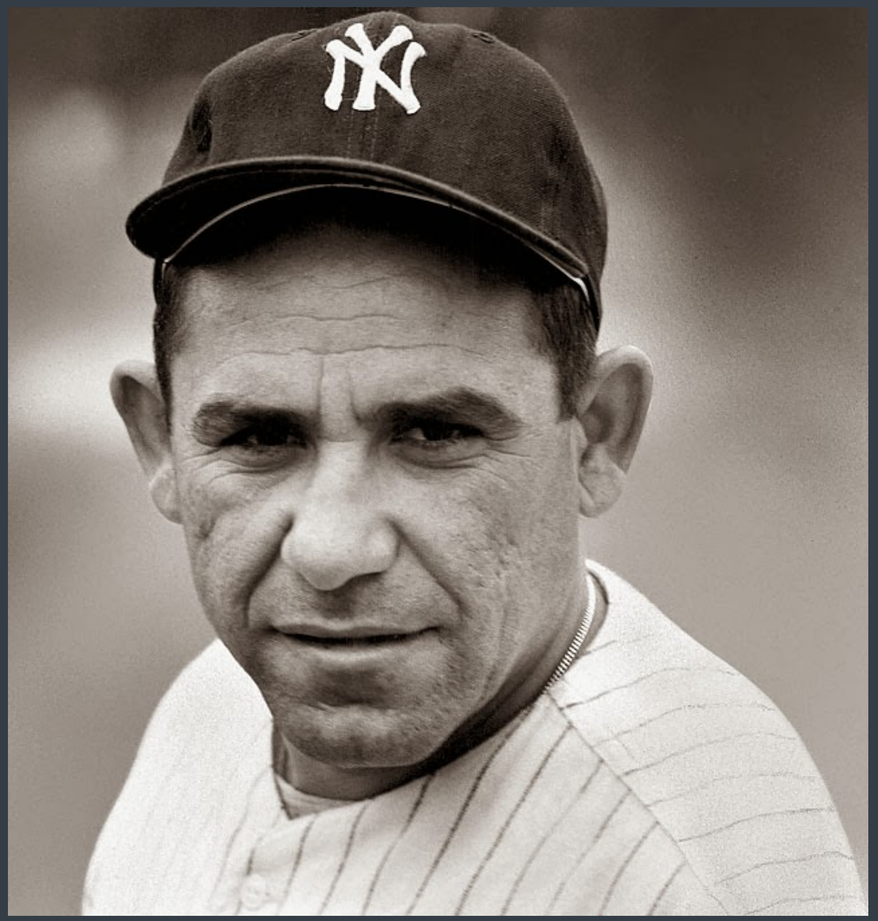
This is a class about software *design*

STEP ONE

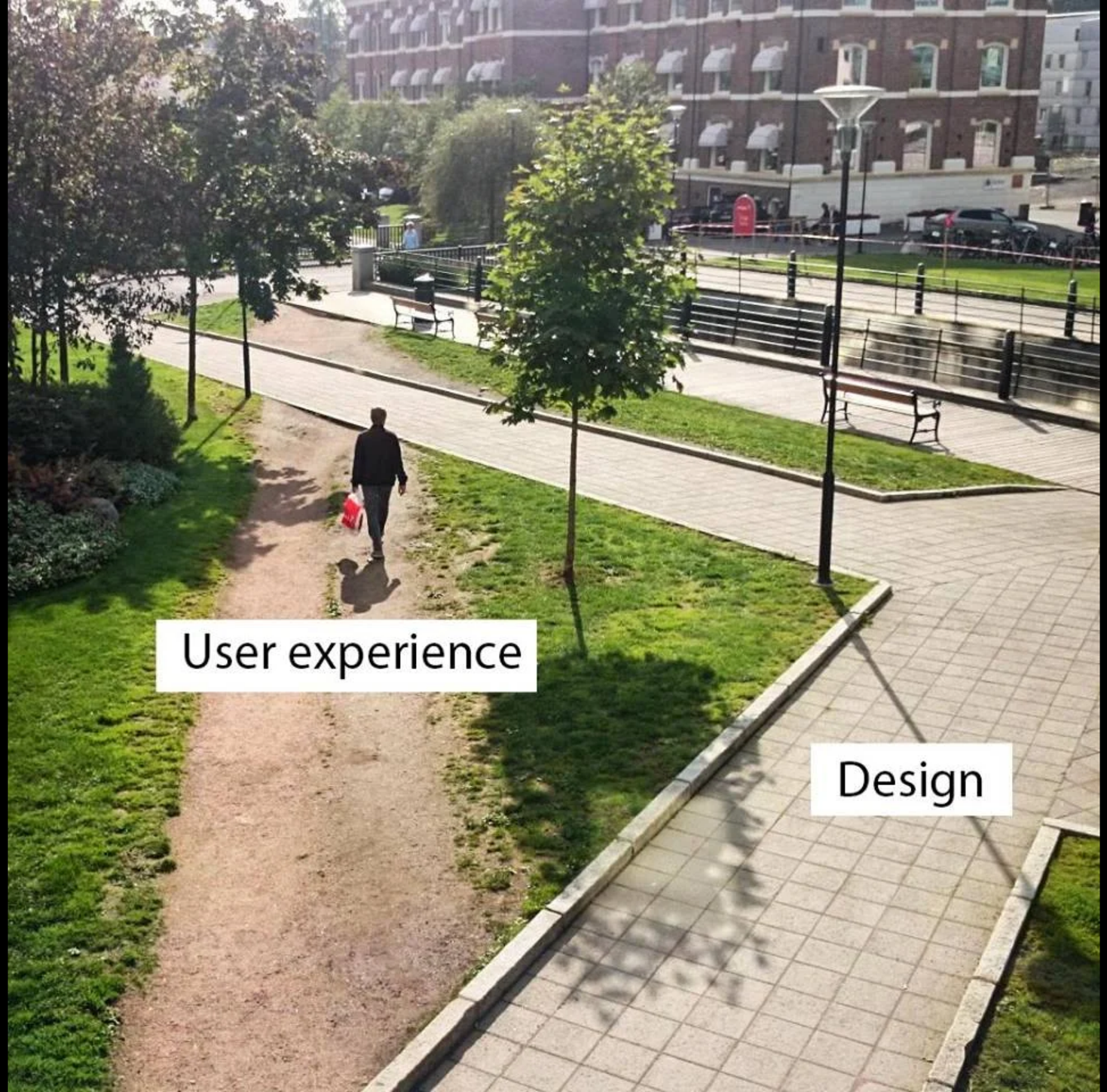
Identifying a *problem worth solving*

"You can observe a lot by just watching"

– Yogi Berra



u/whatthesamm, posted to r/DesirePath on Sept. 22, 2019.


User experience
Design

Sarah Nicholas
@SarahNicholas

This sign knows it has lost.

8:06 AM · Jun 6, 2021 · Twitter for Android

709 Retweets **217** Quote Tweets **4,896** Likes

What do you look for?

Look for *workarounds* and *hacks*

"Errors" are goldmines

Pay attention to *artifacts*

zuck
Instagram HQ
500M likes
zuck Thanks to everyone in our community for helping us reach this milestone!
kevin @zuck

From Observations to Interviews

The *What*

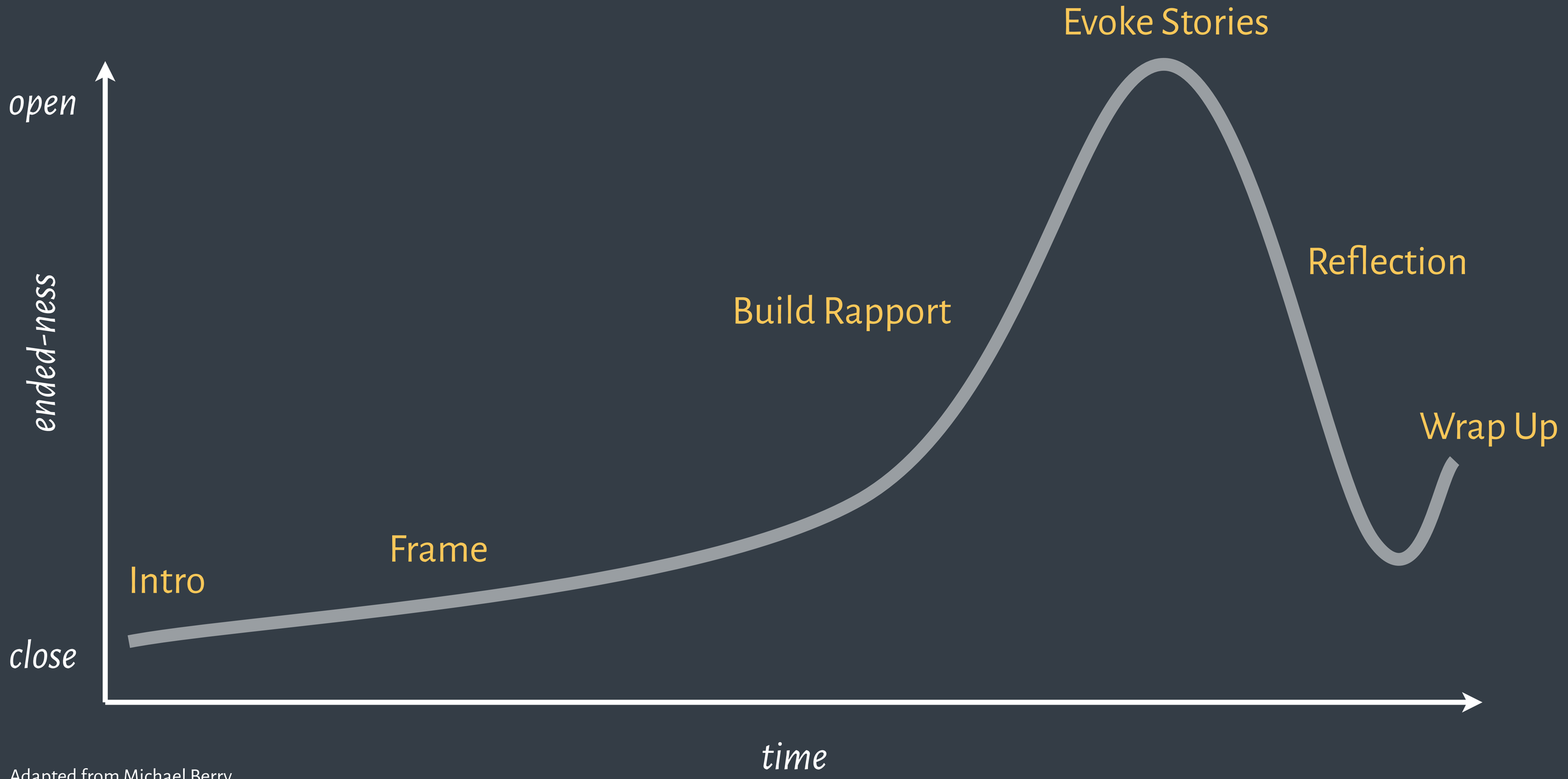
From Observations to Interviews

The *What*

From Observations to Interviews

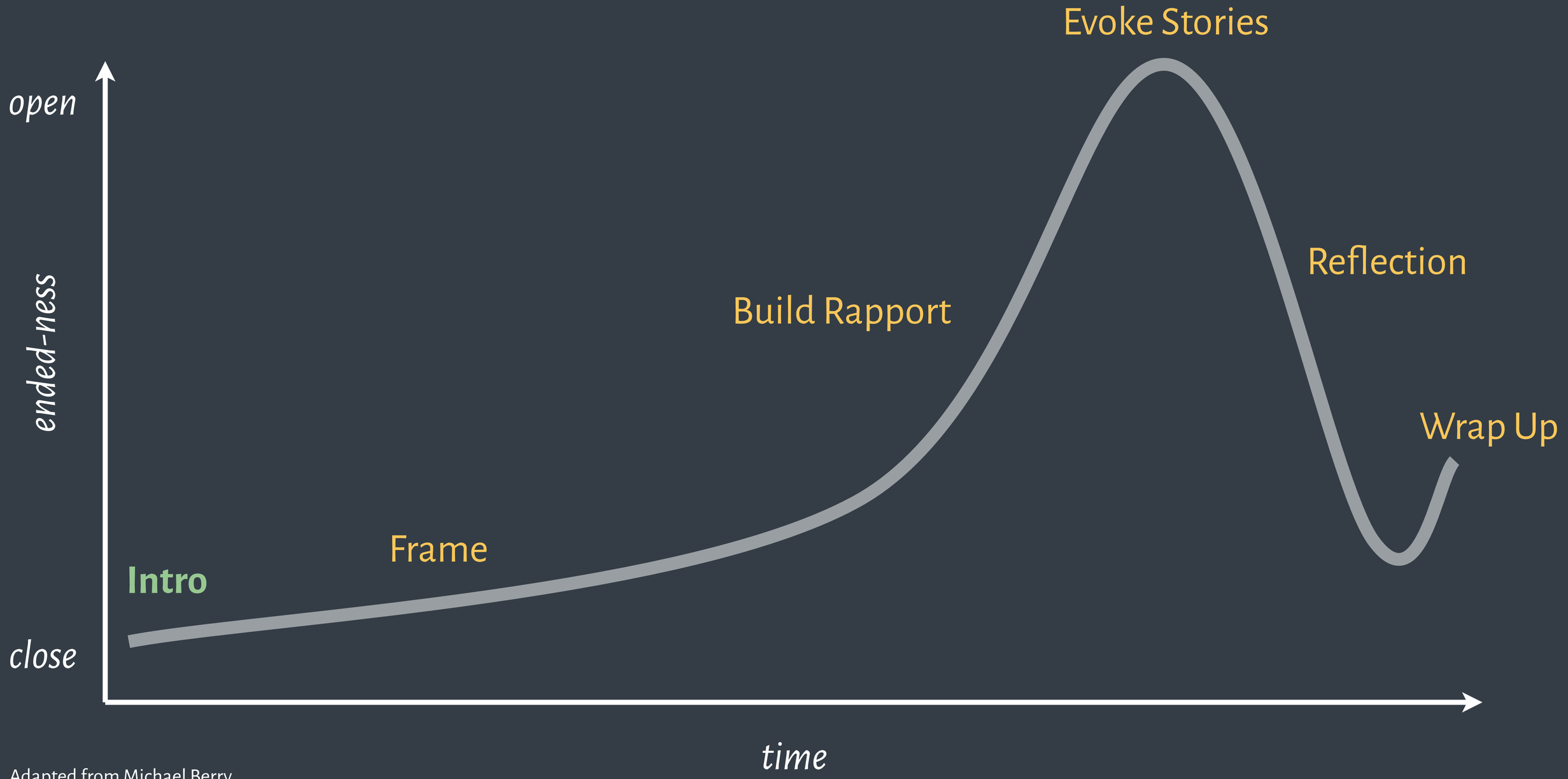
The *Why*

User Interviews



Adapted from Michael Berry.

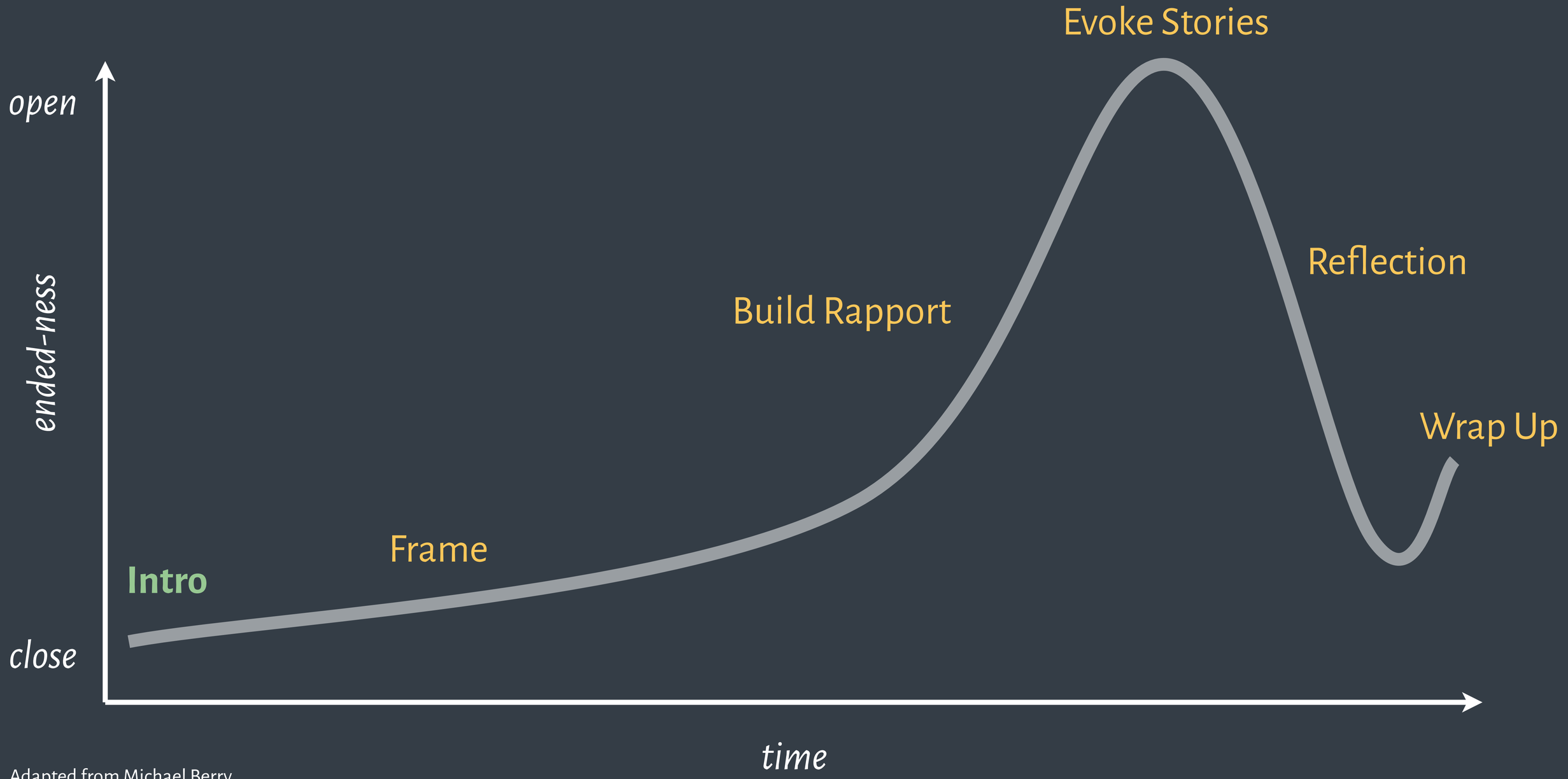
User Interviews



Adapted from Michael Berry.

ANFIELD

User Interviews



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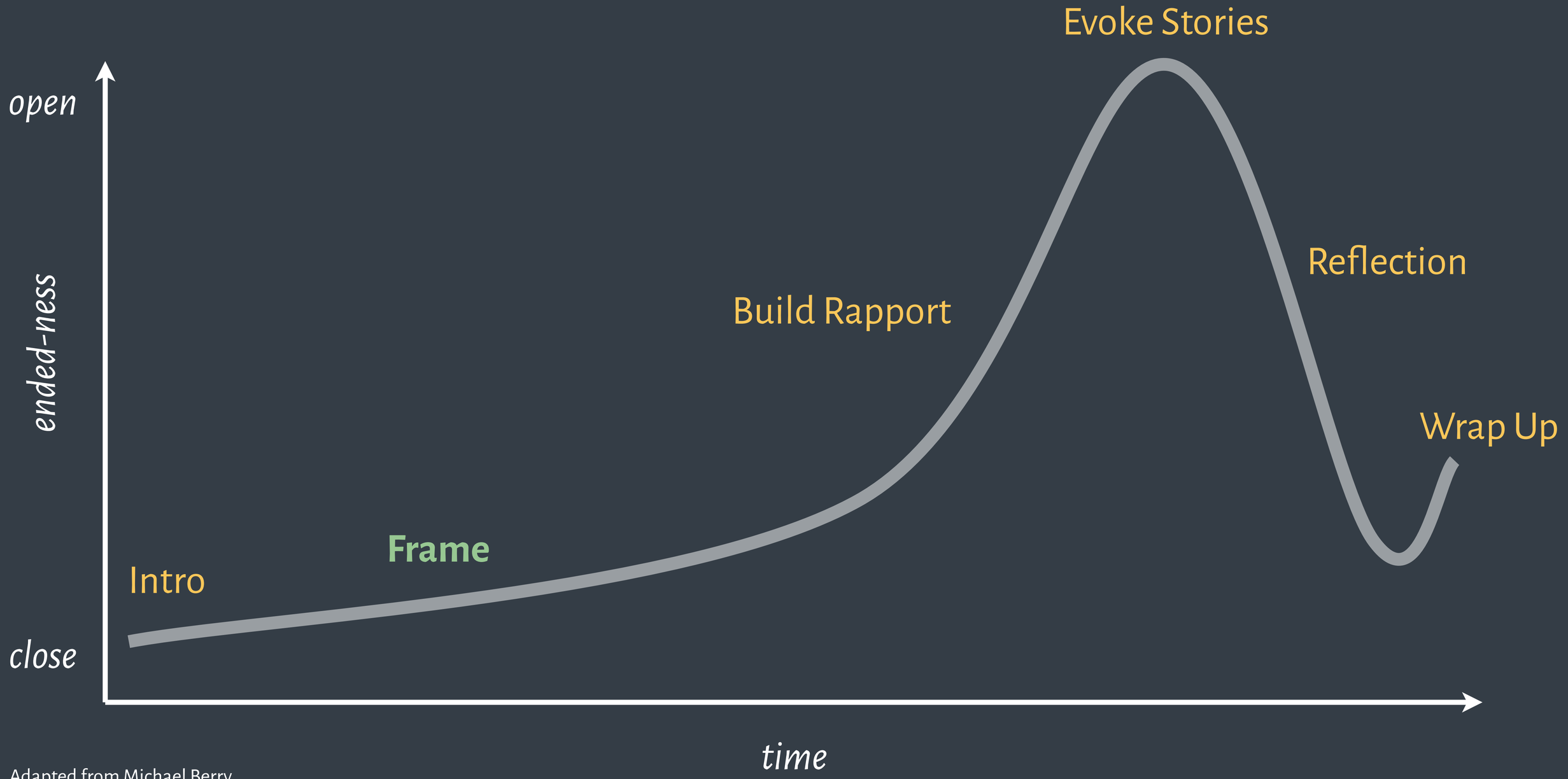

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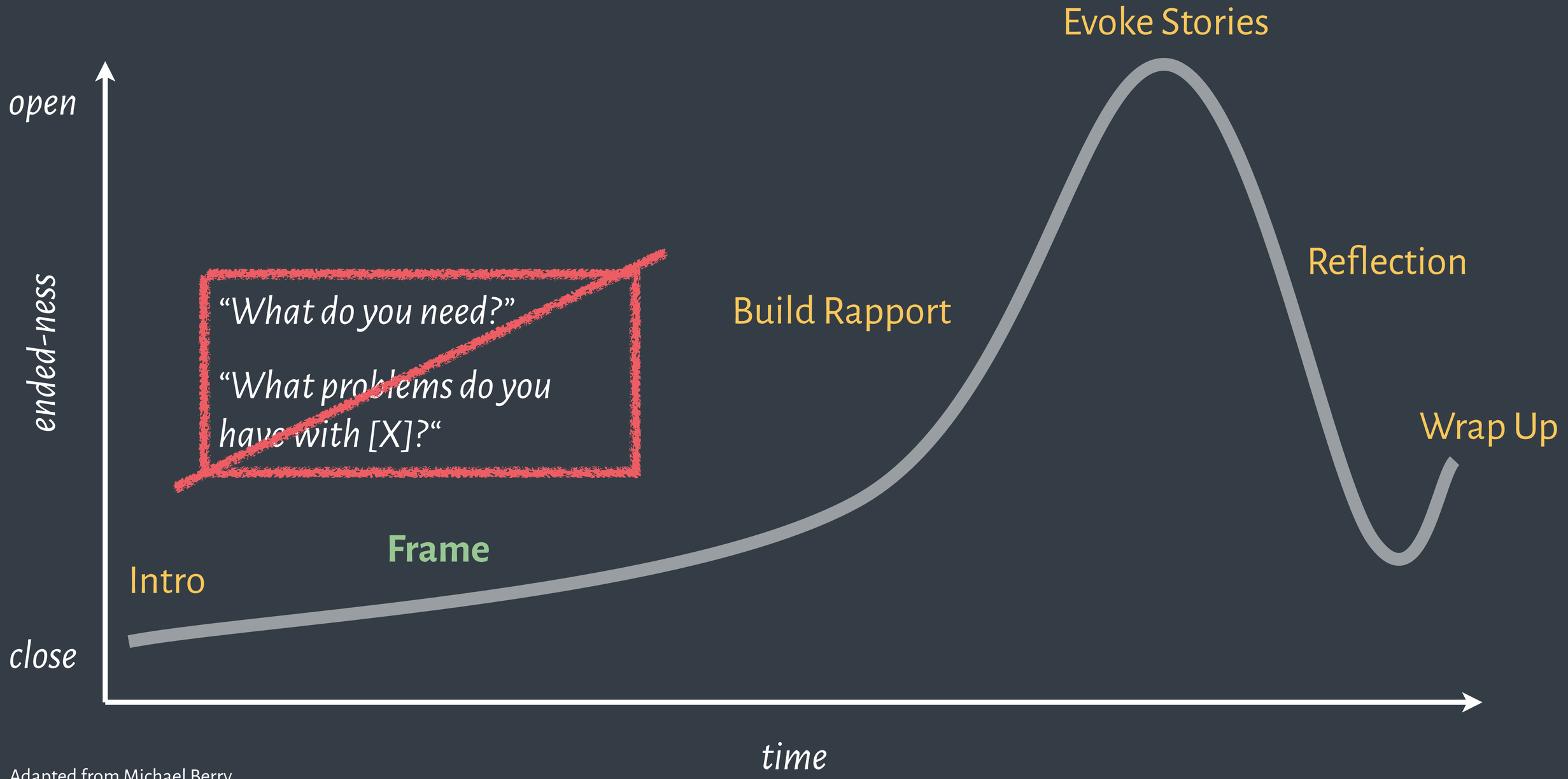

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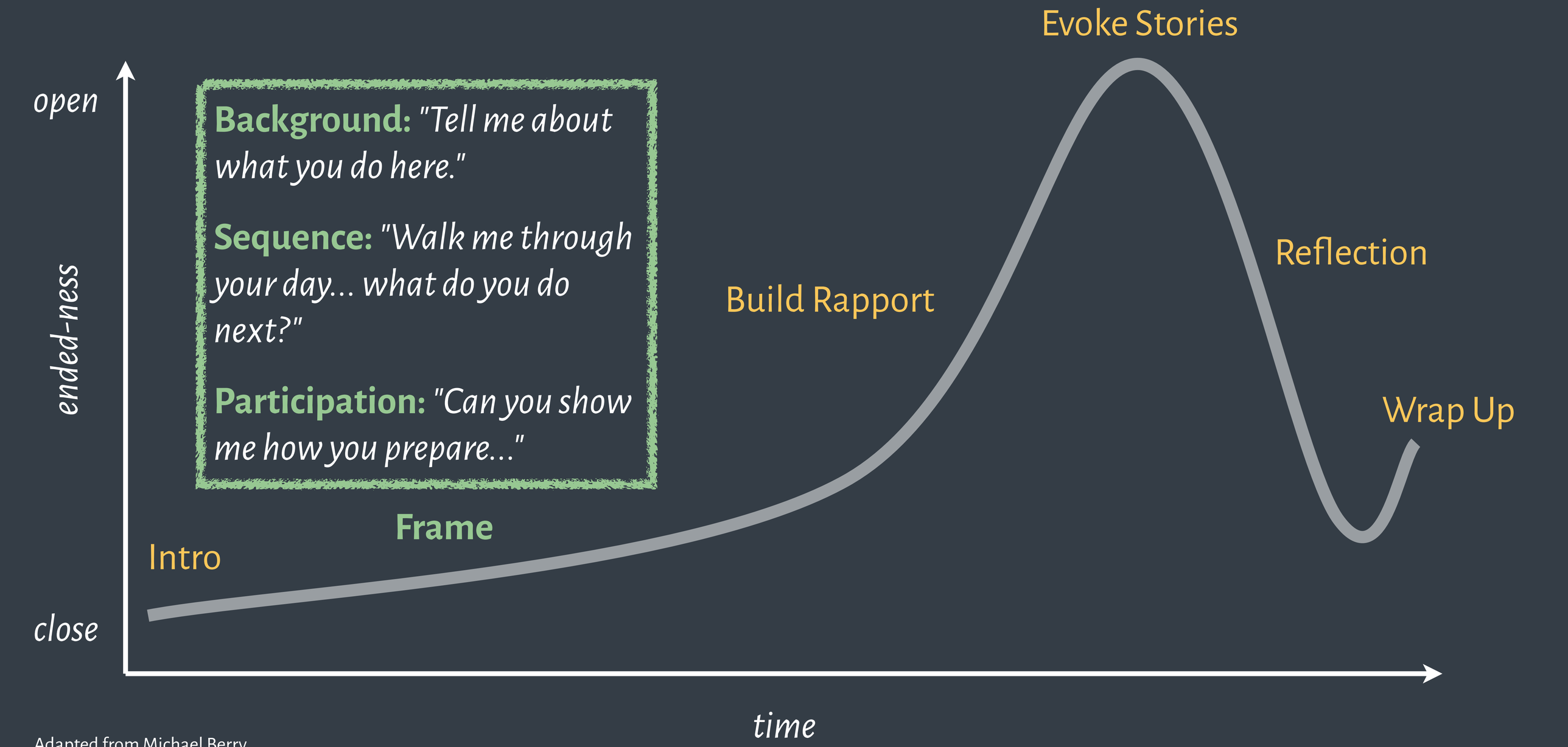

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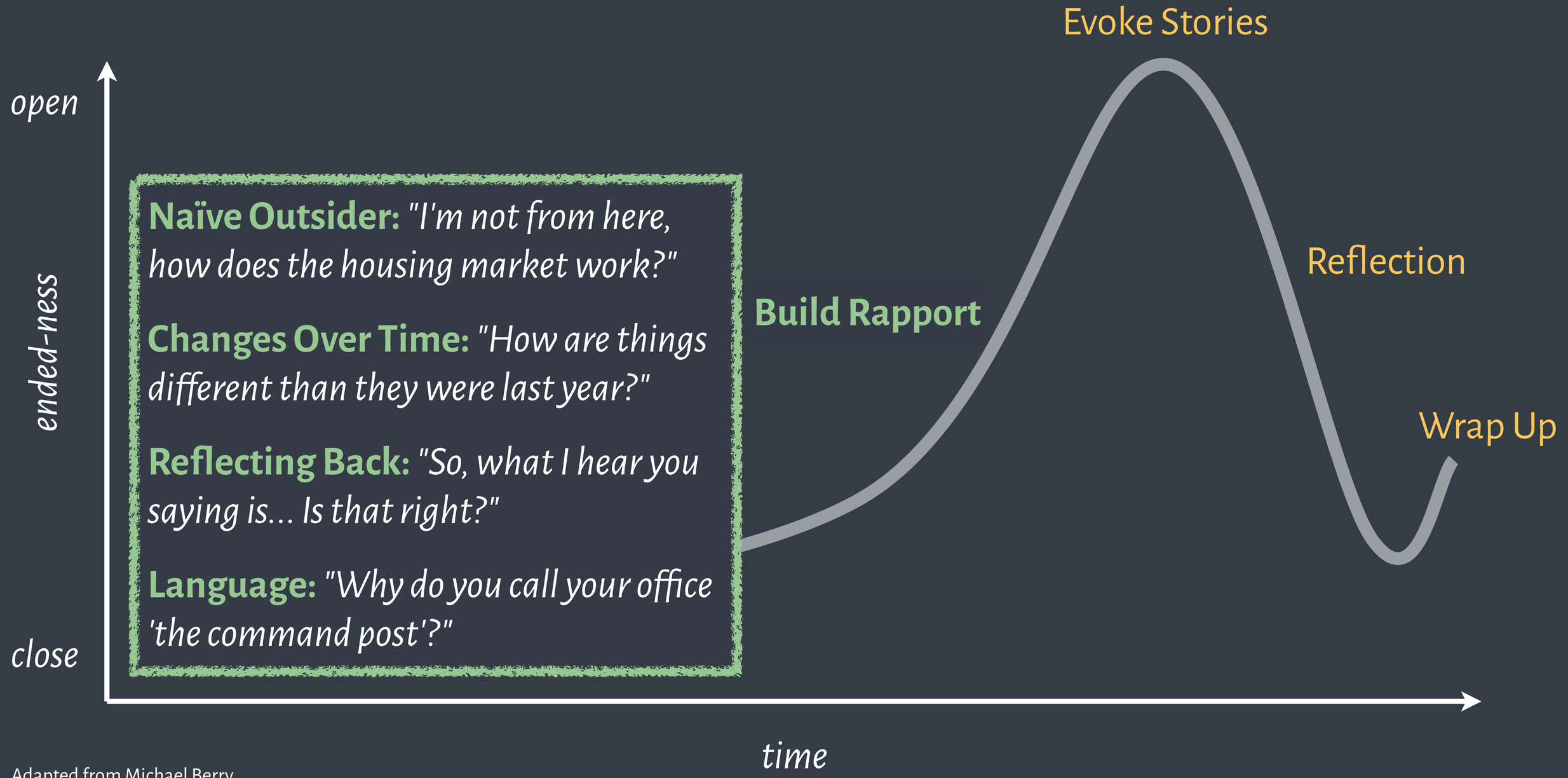

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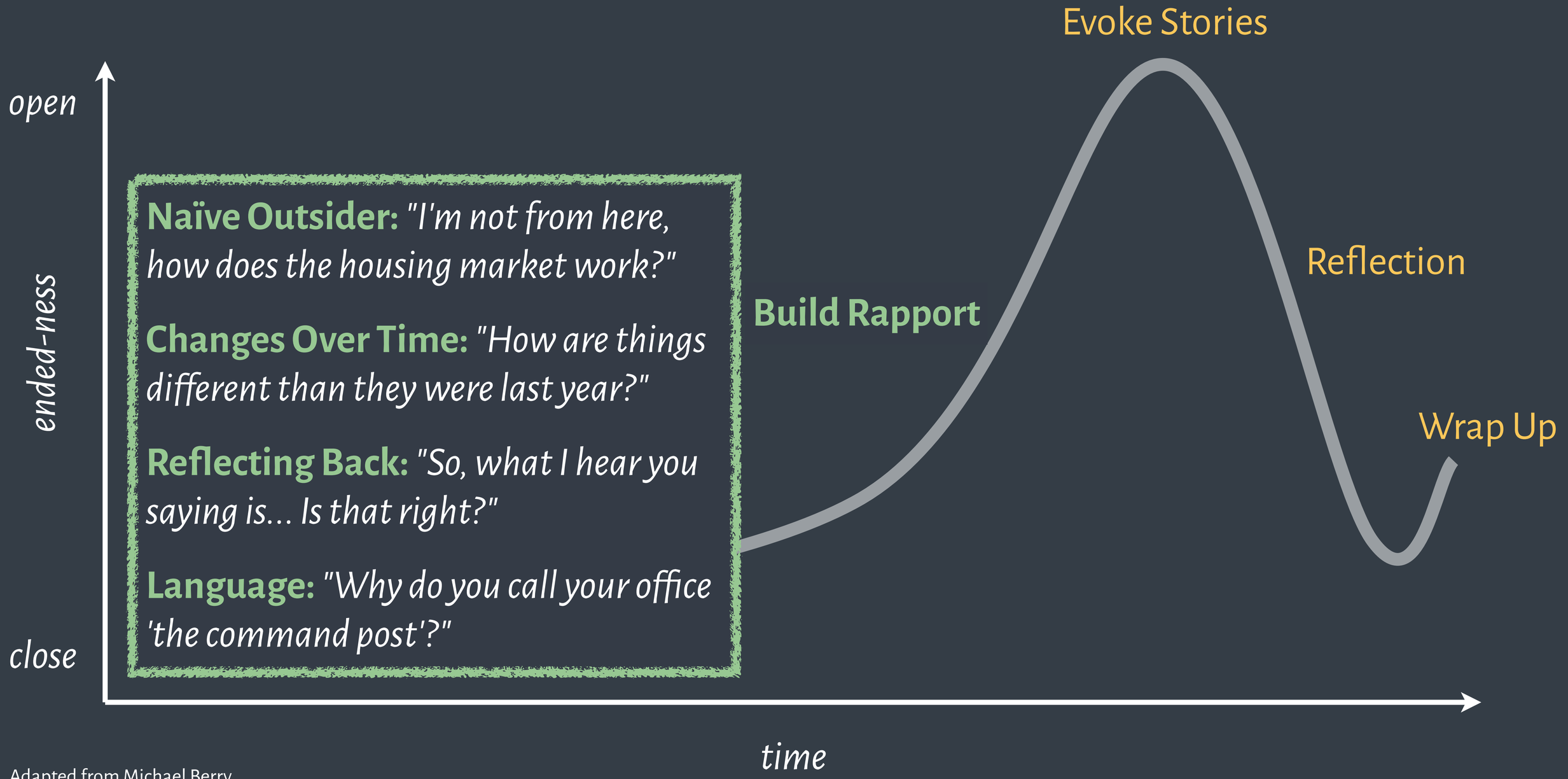

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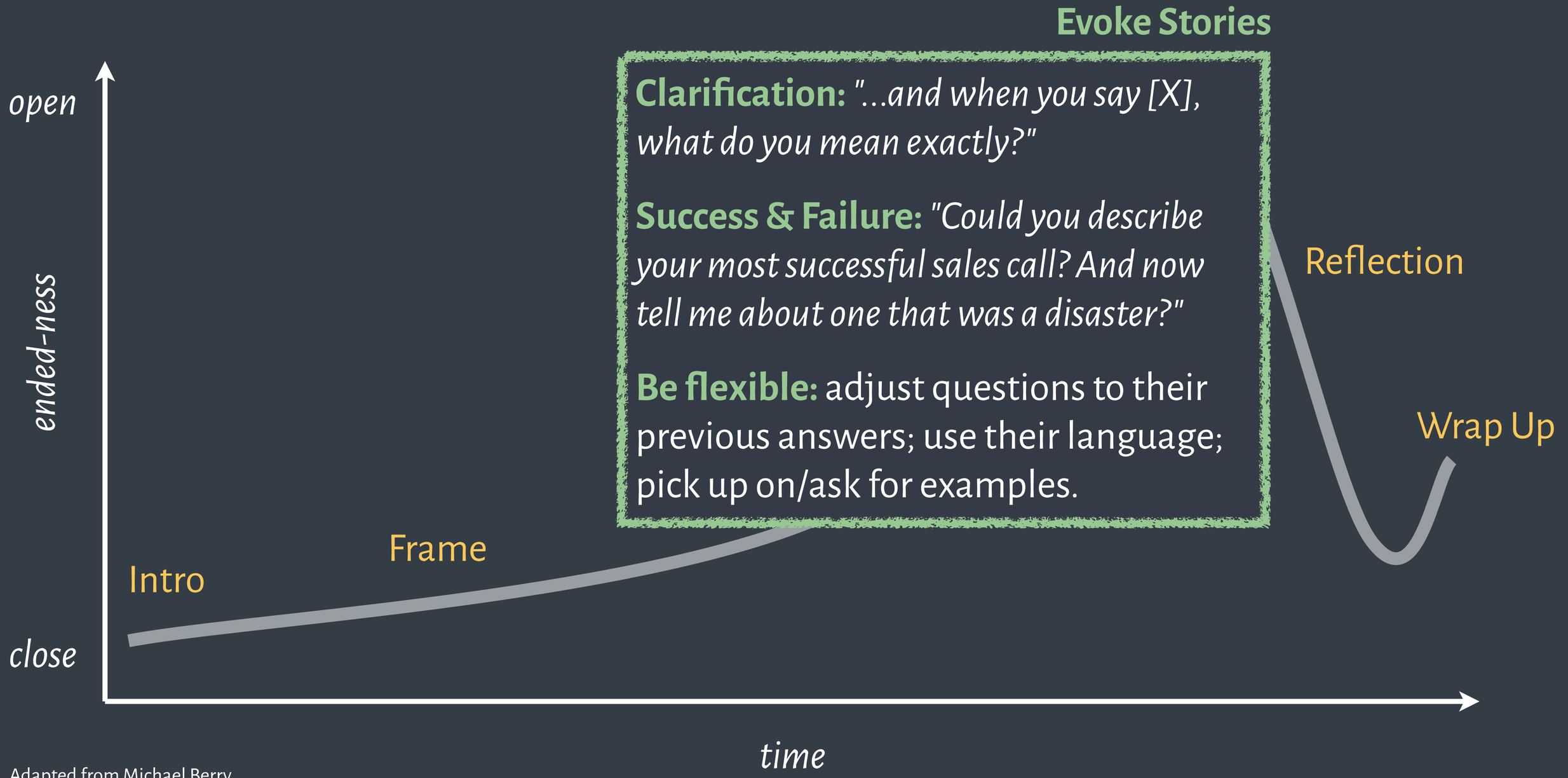

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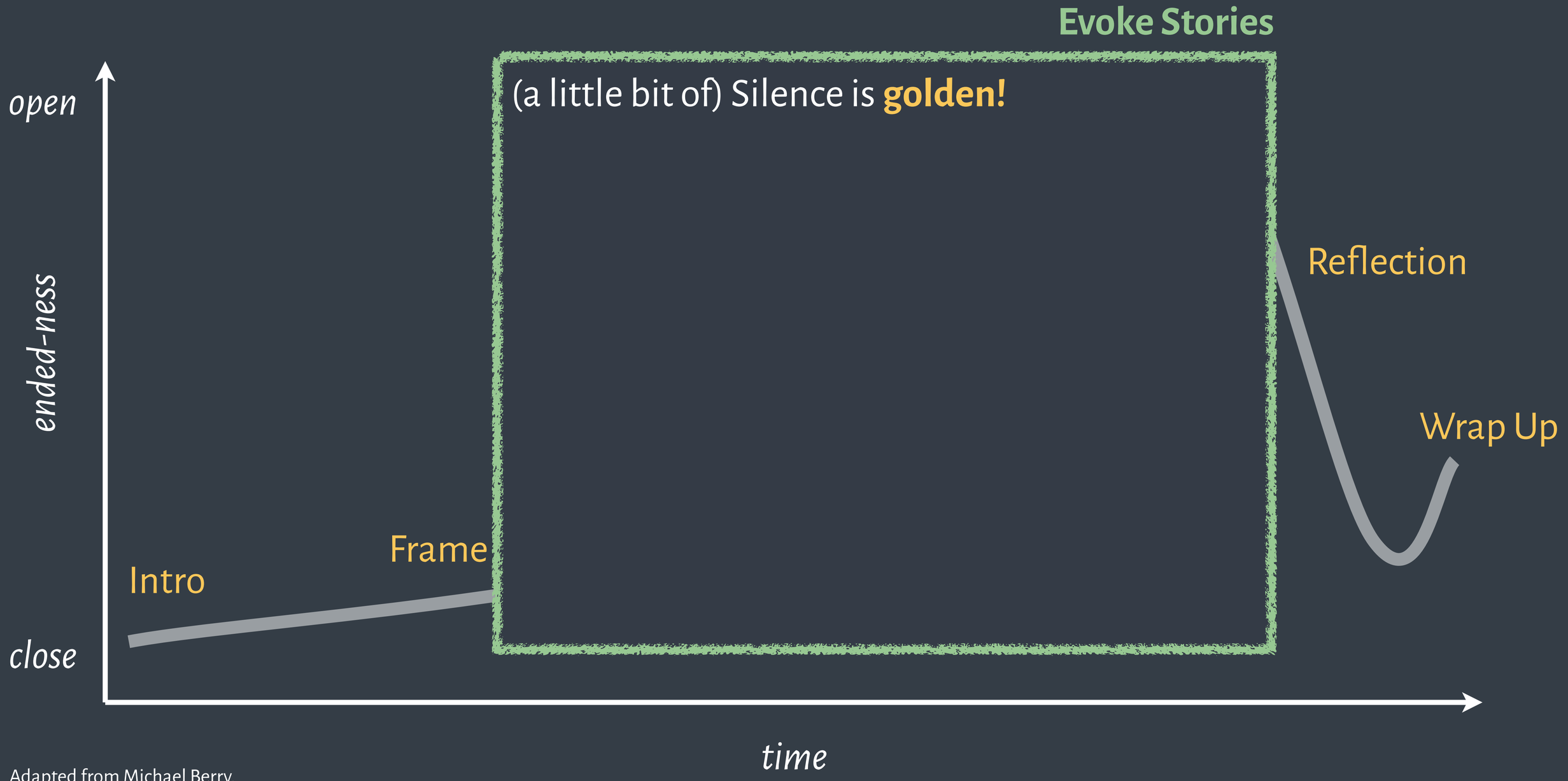

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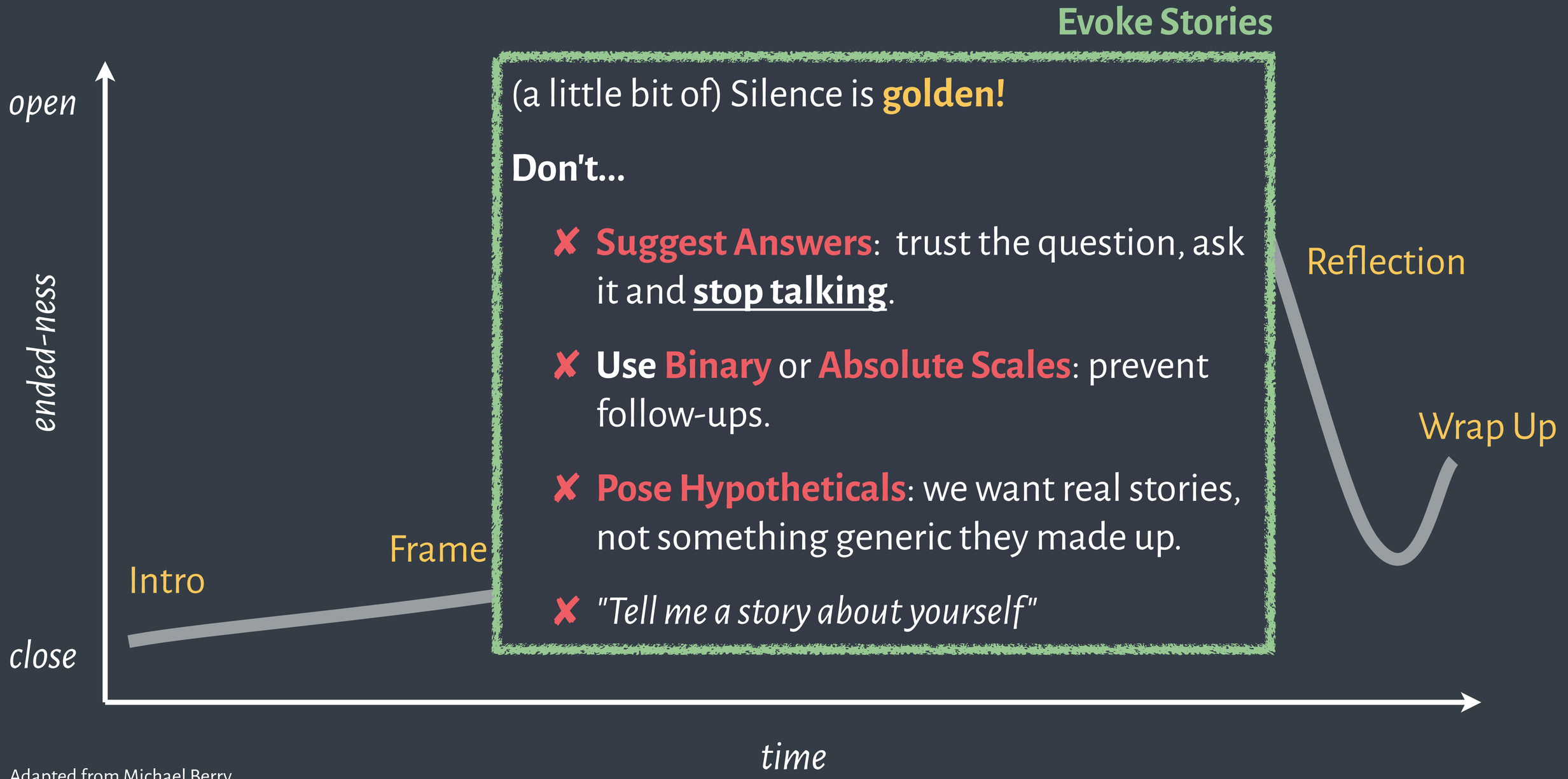

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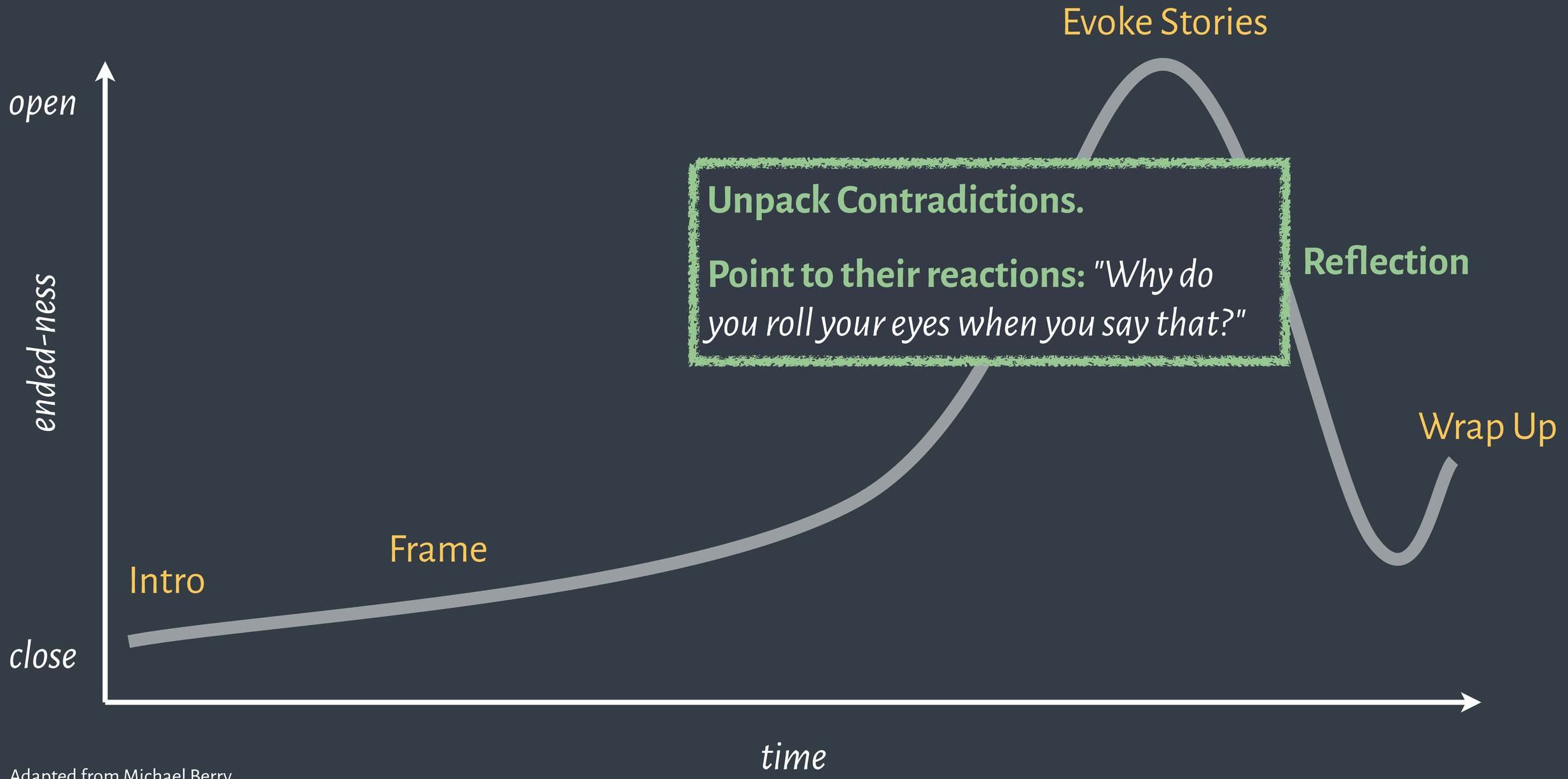

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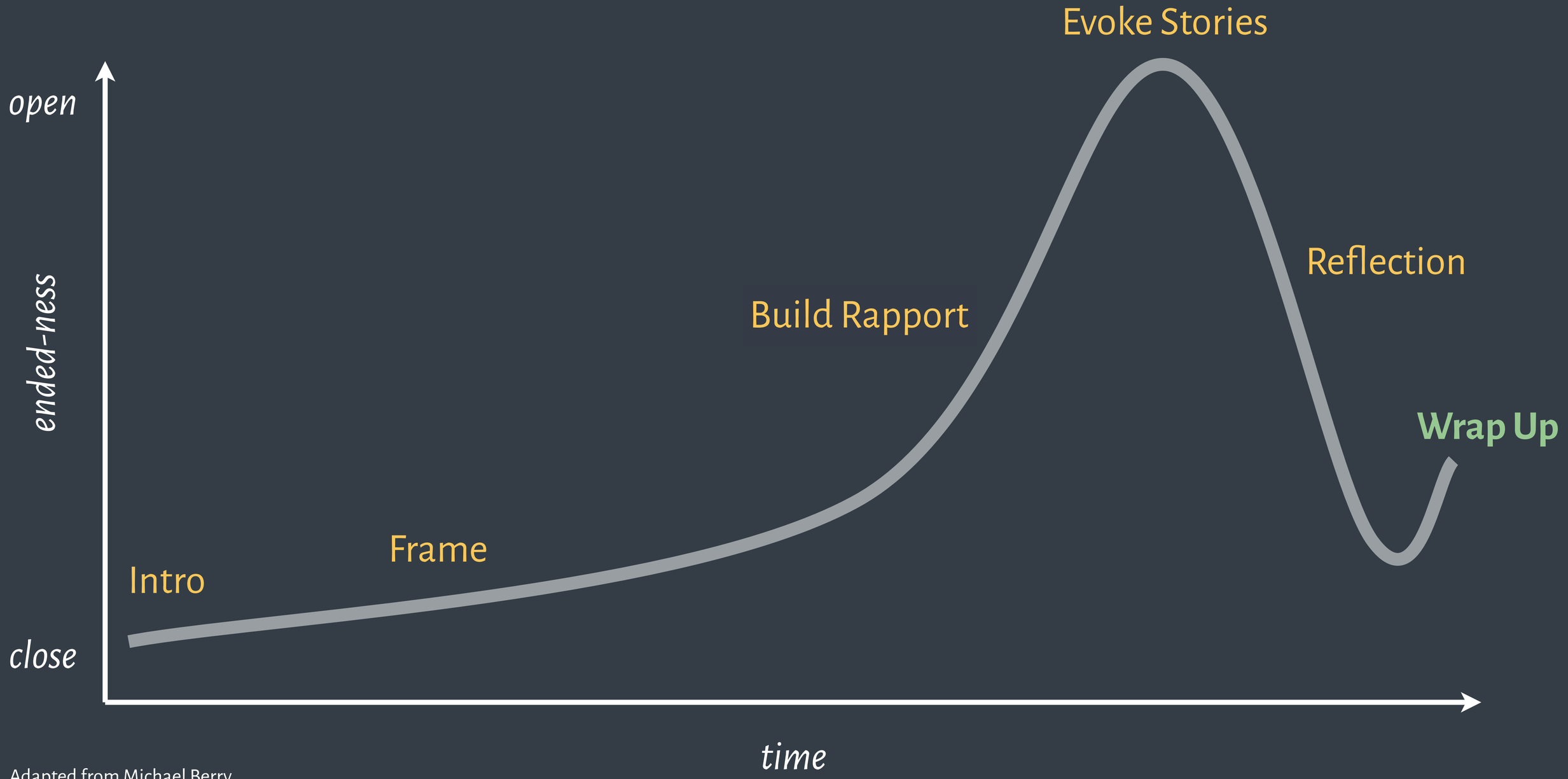

Adapted from Michael Berry.

Analyzing Interview Results

Goals

You can explain **why** people do **unusual things**.

Develop your **point of view** as a designer.

Define the **scope** of your project

Analyzing Interview Results

Goals

You can explain **why** people do **unusual things**.

Develop your **point of view** as a designer.

Define the **scope** of your project

Process

Look for **surprises**, **tensions**, and **contradictions** in what people said.

Reflect on the implications for your project.

Summary

Need finding helps us ground our design in **real (not imagined) user needs**.

Observation is a good way to **uncover the "what"**: workarounds, hacks, errors that suggest an opportunity for a design intervention.

Interviews help us **connect through to the "why"**: people make sense to themselves, and it's our job to understand how to square the contradictions/tensions.

Key to interview success: **build rapport** + be willing to **veer off script** and follow-up surprising/unexpected threads.