6.S979

Intro to the Human-Centered Design Process

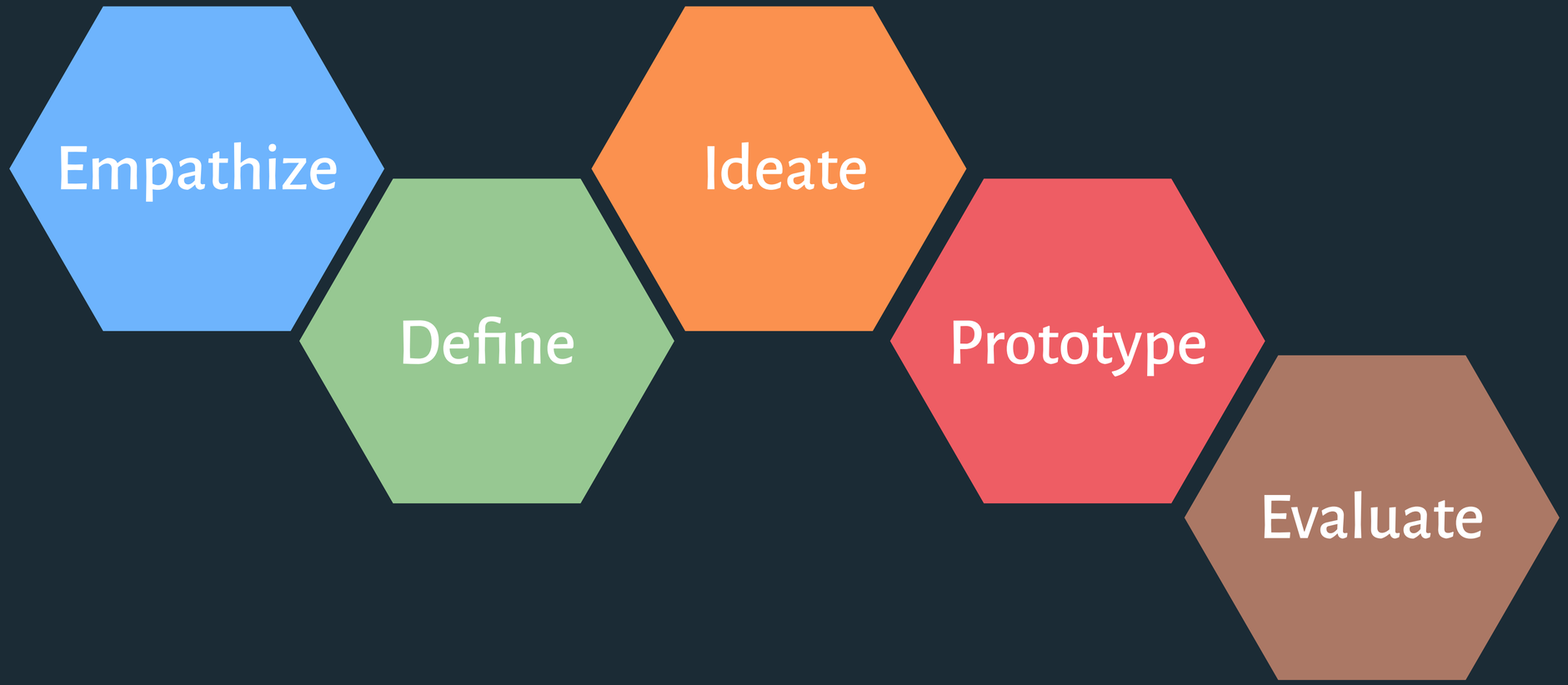
Based on material from Scott Klemmer & James Landay

Arvind Satyanarayan

Observe users.

Conduct **interviews**.

Seek **stories**.



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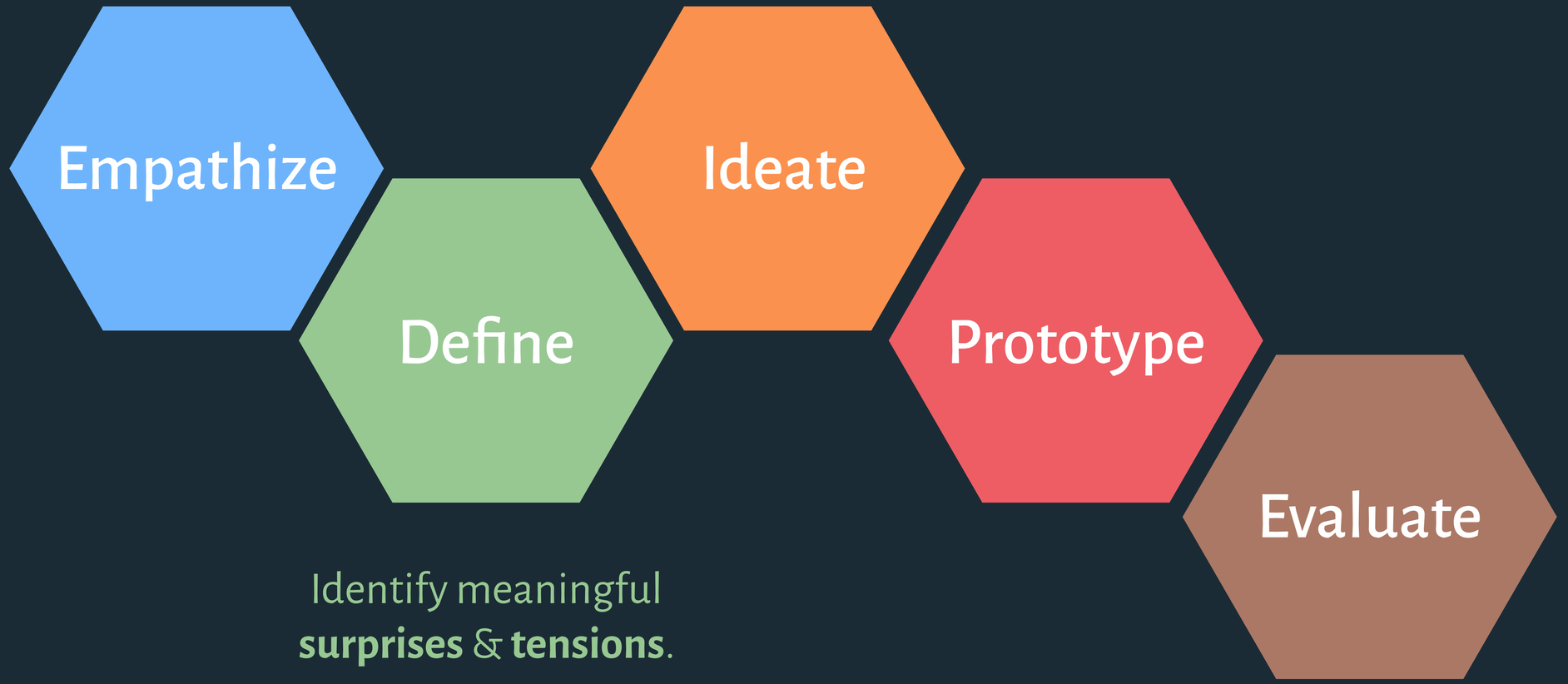

Identify meaningful **surprises** & **tensions**.

What is your **Point of View?**

Based on the Stanford d.school's Design Thinking Bootleg

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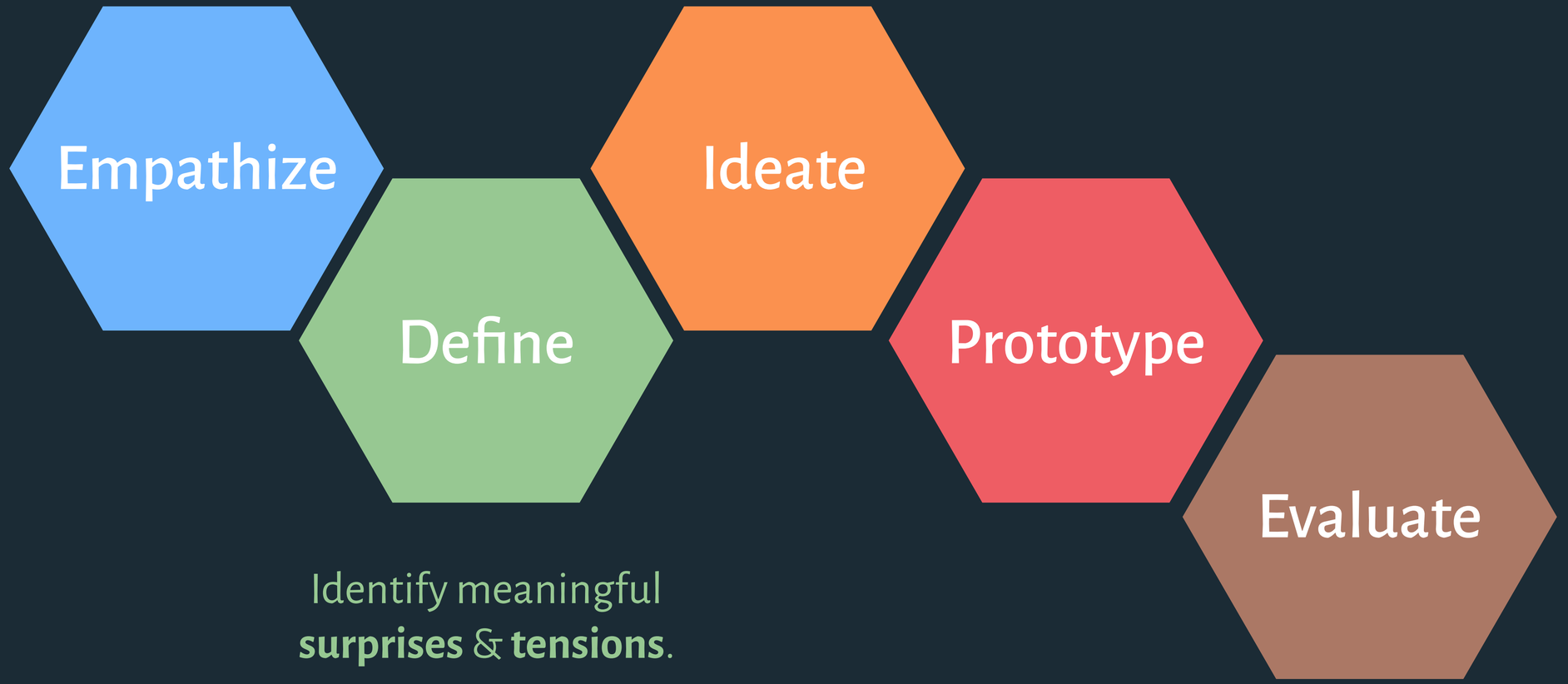

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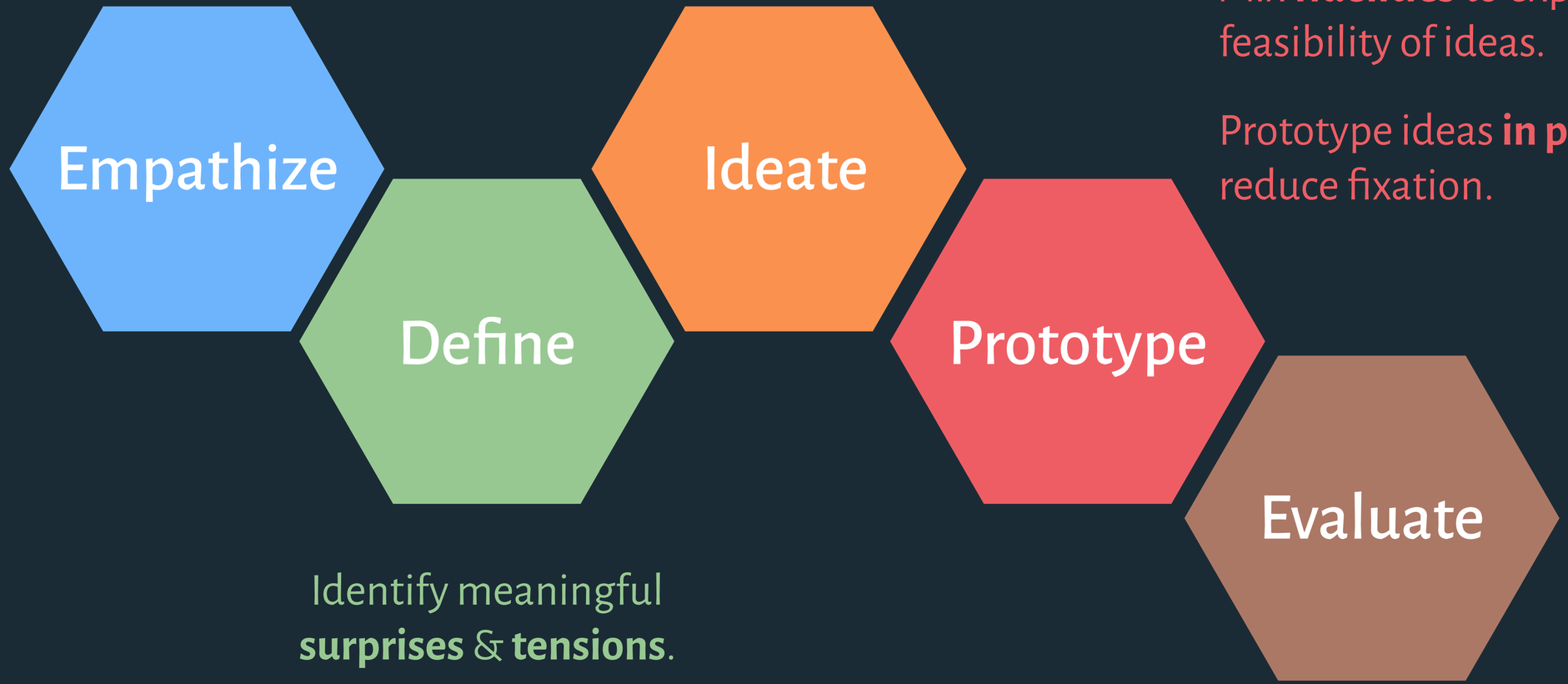

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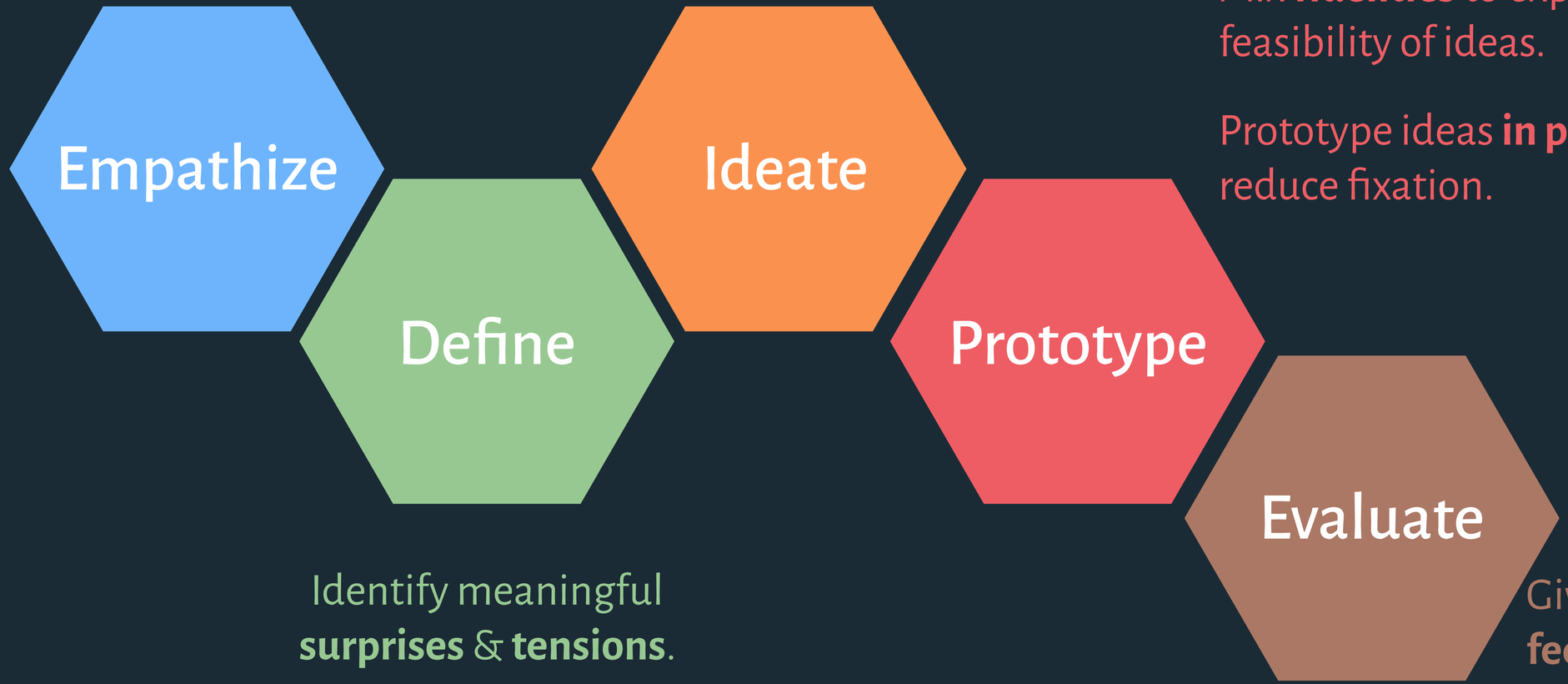

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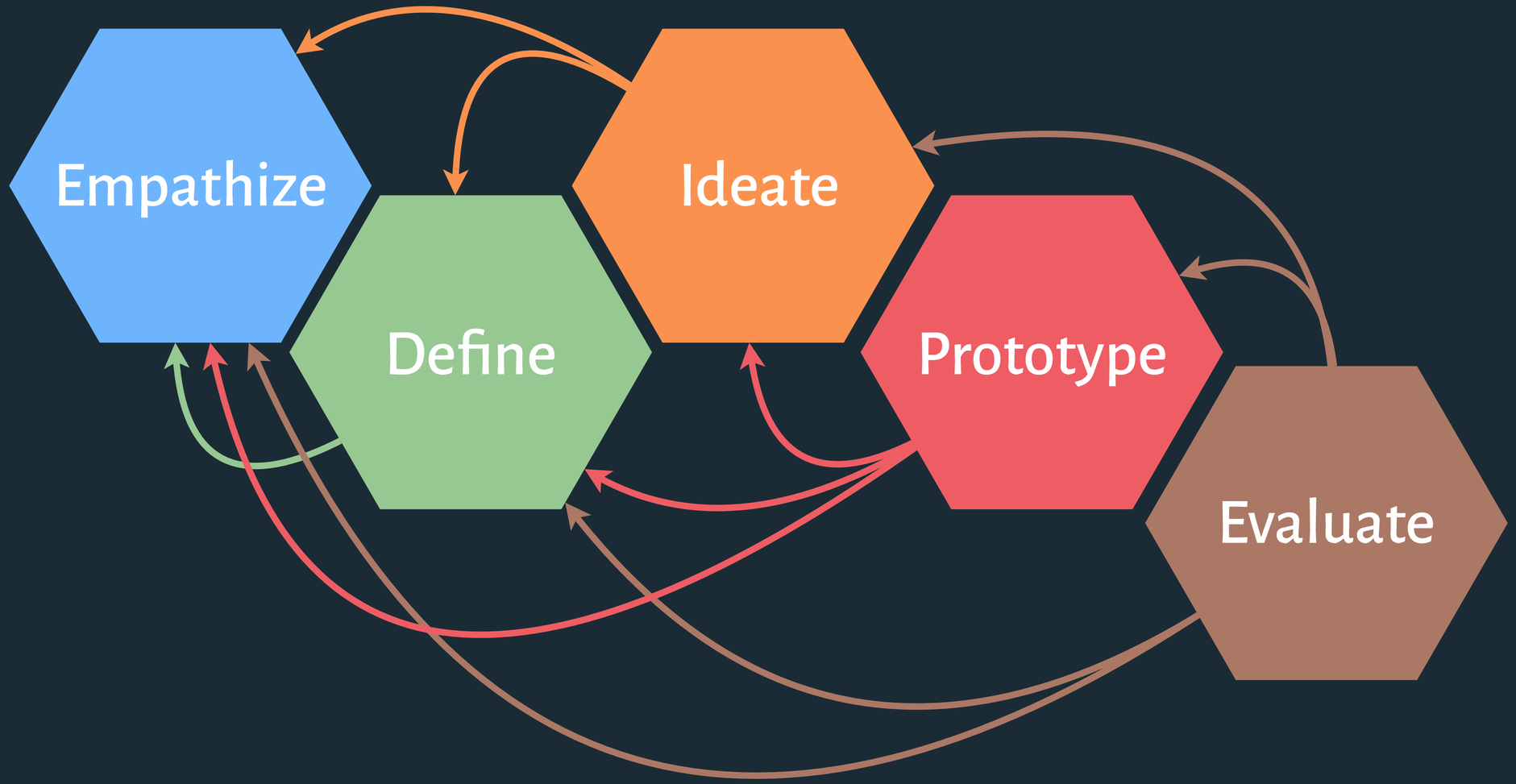
Give & receive **feedback**.

Refine ideas, prototypes, point of view.

Based on the Stanford d.school's Design Thinking Bootleg



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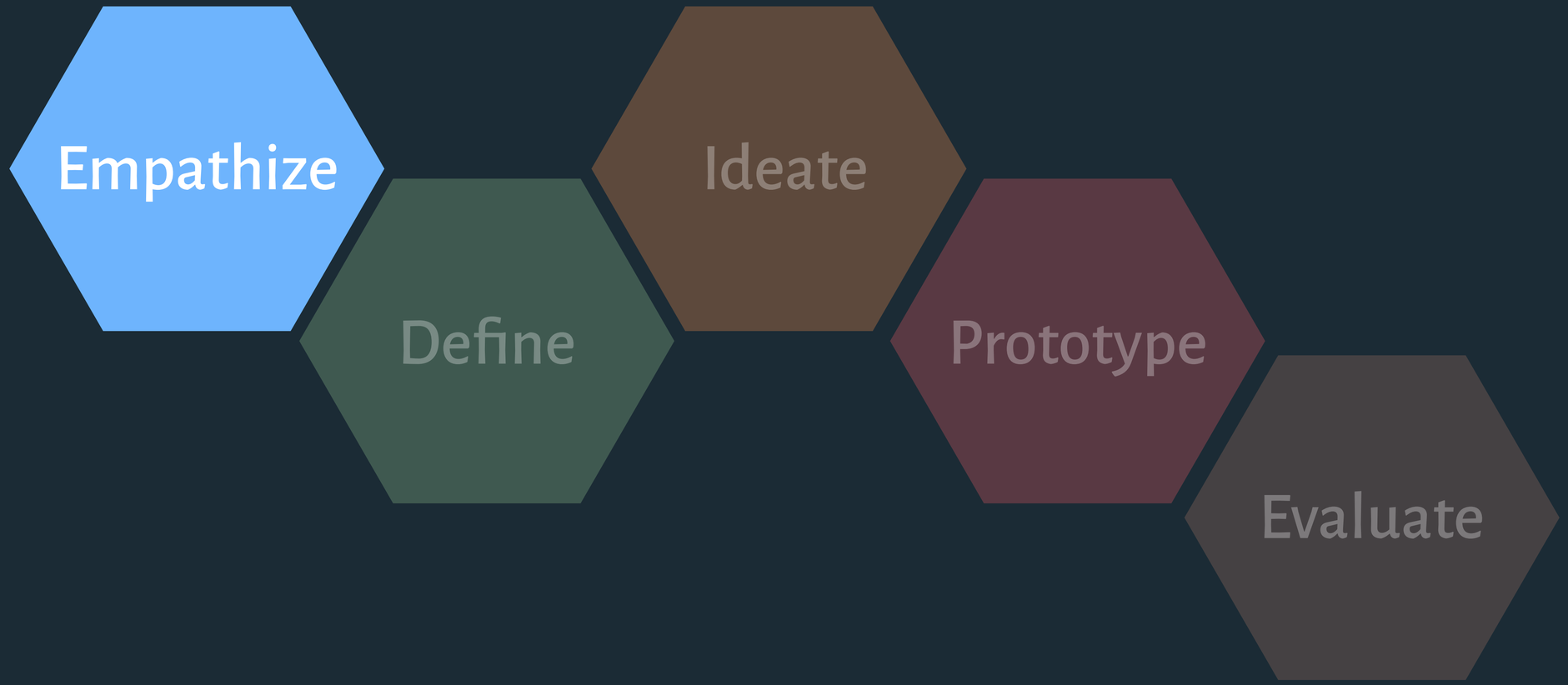


Based on the Stanford d.school's Design Thinking Bootleg

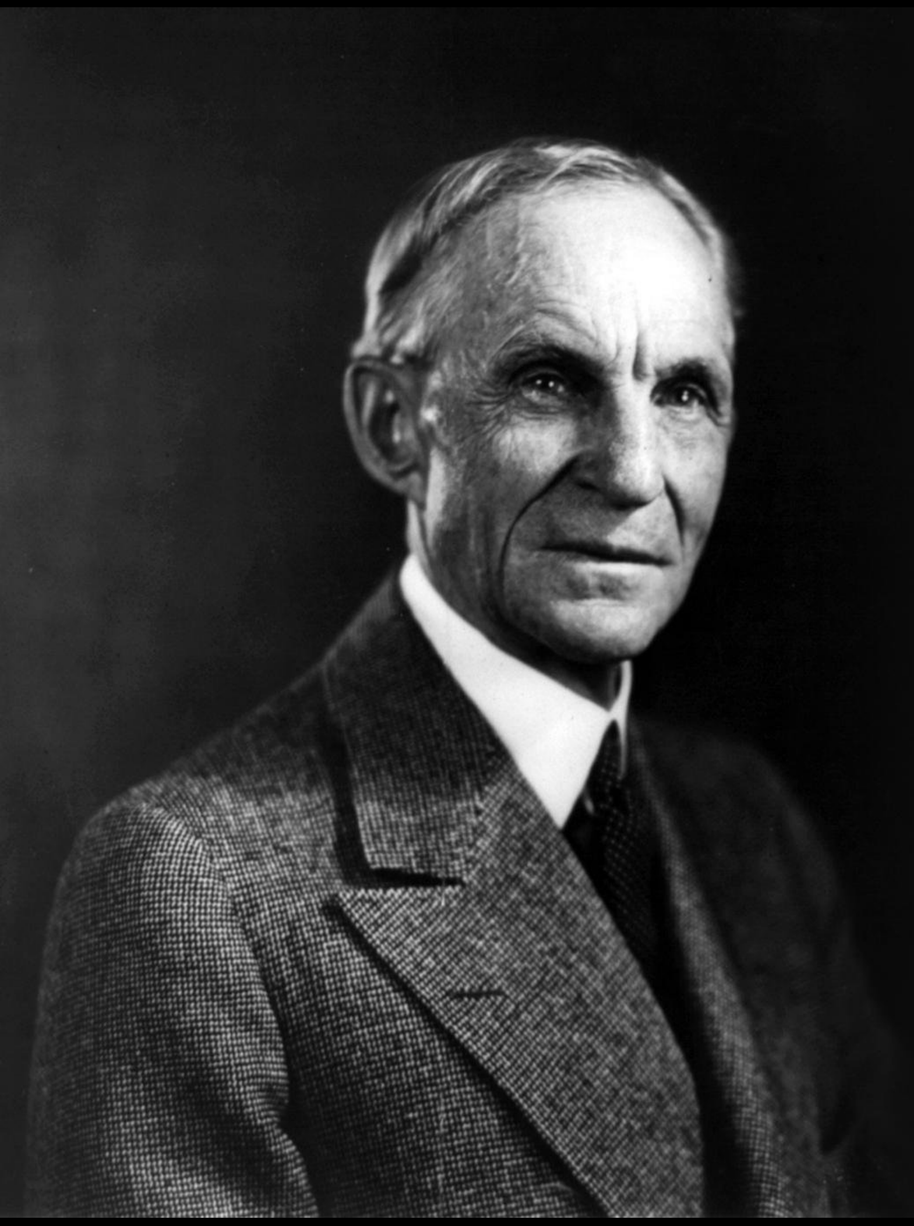
Poster by Alvy Brooks (@alvybrooks)

Photo from Larry Kim (@larrykim)

"You can observe a lot by just watching"

—Yogi Berra

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



“IF I HAD ASKED PEOPLE WHAT THEY WANTED, THEY WOULD HAVE SAID: **FASTER HORSES...**”

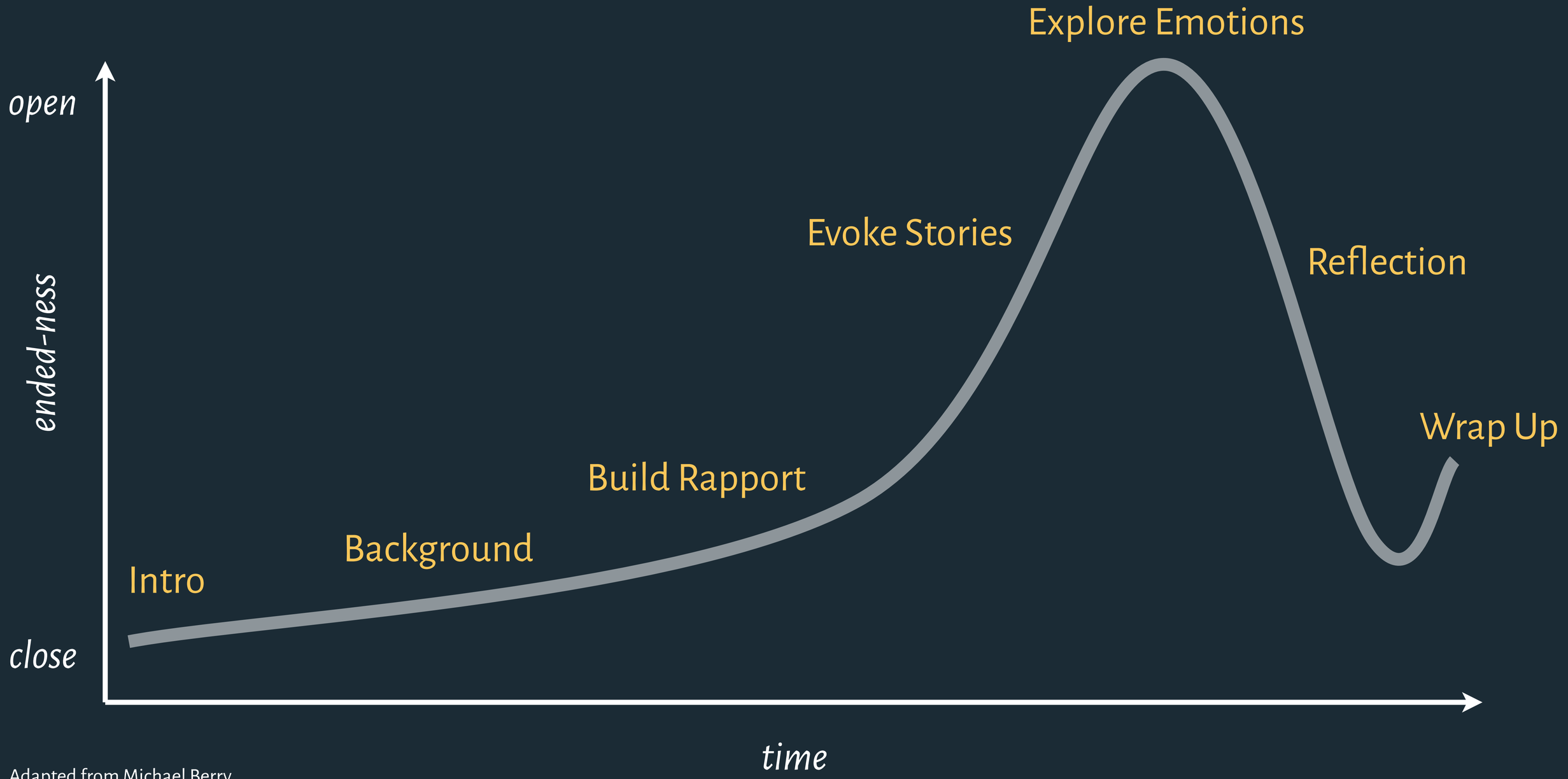
Henry Ford

Interviews

"What do you need?"

"What problems do you have with [X]?"

Interviews



Adapted from Michael Berry.

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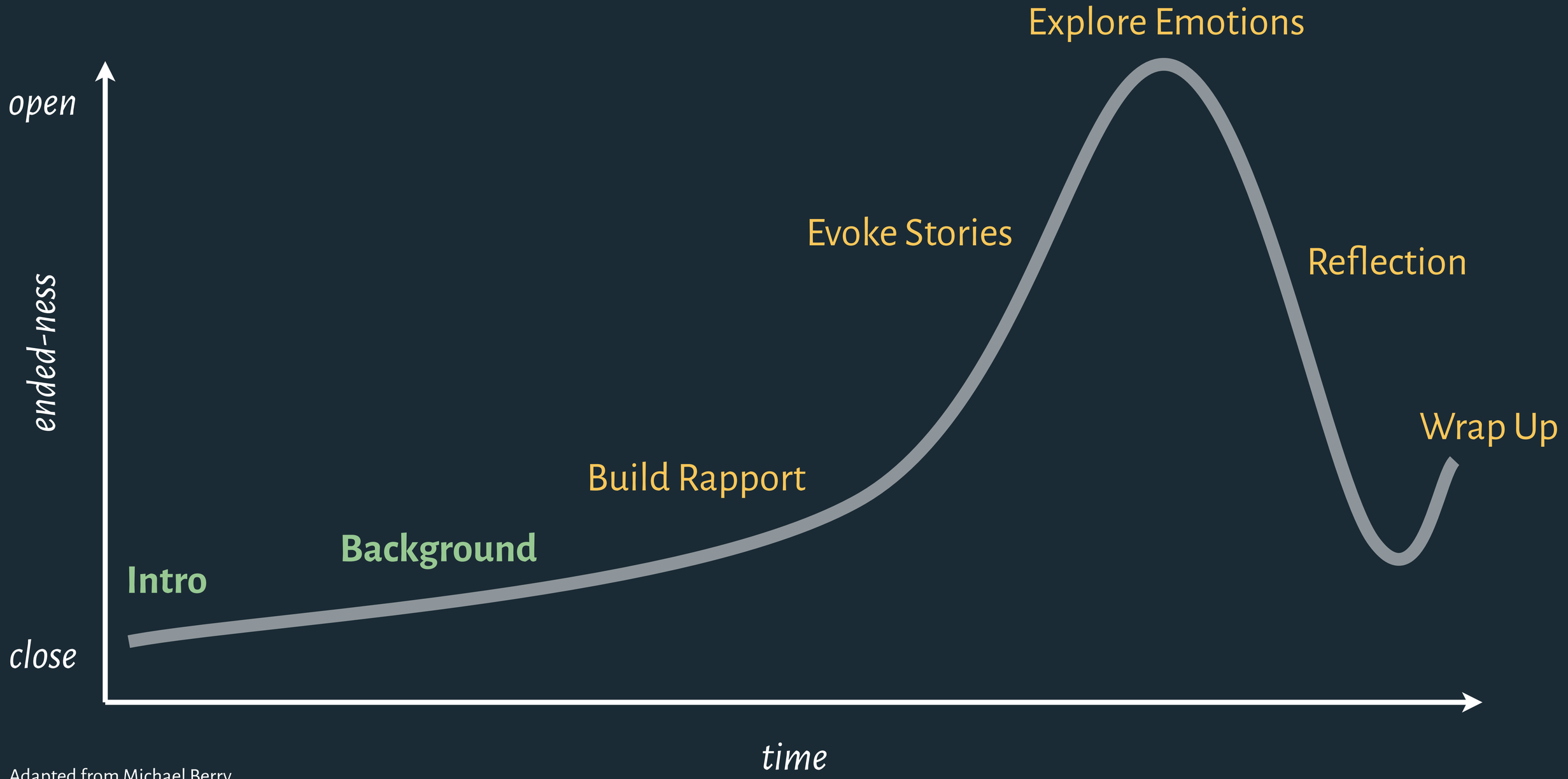

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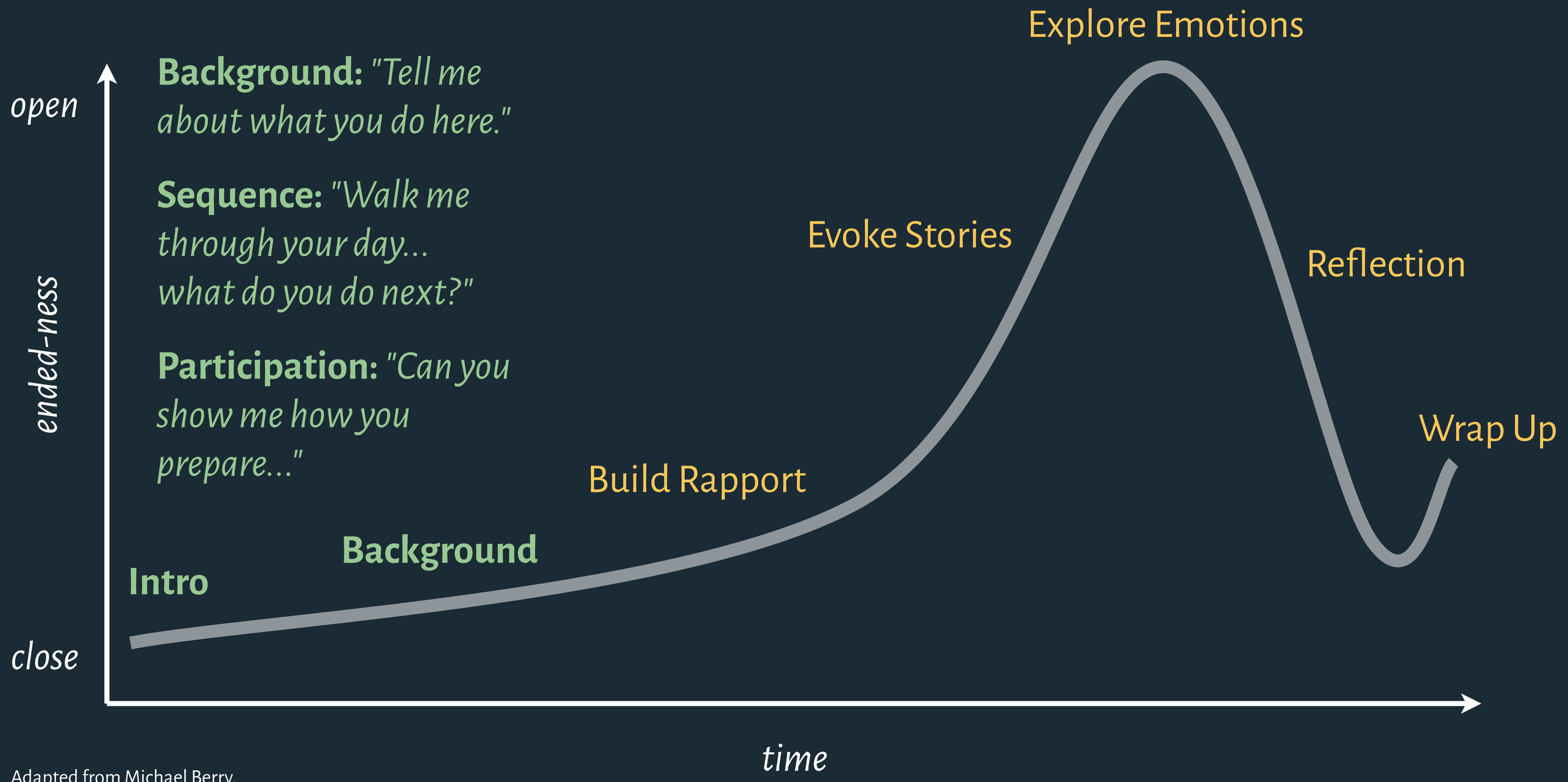
ANFIELD

Interviews



Adapted from Michael Berry.

Interviews

Naïve Outsider: *"I'm not from here, how does the housing market work?"*

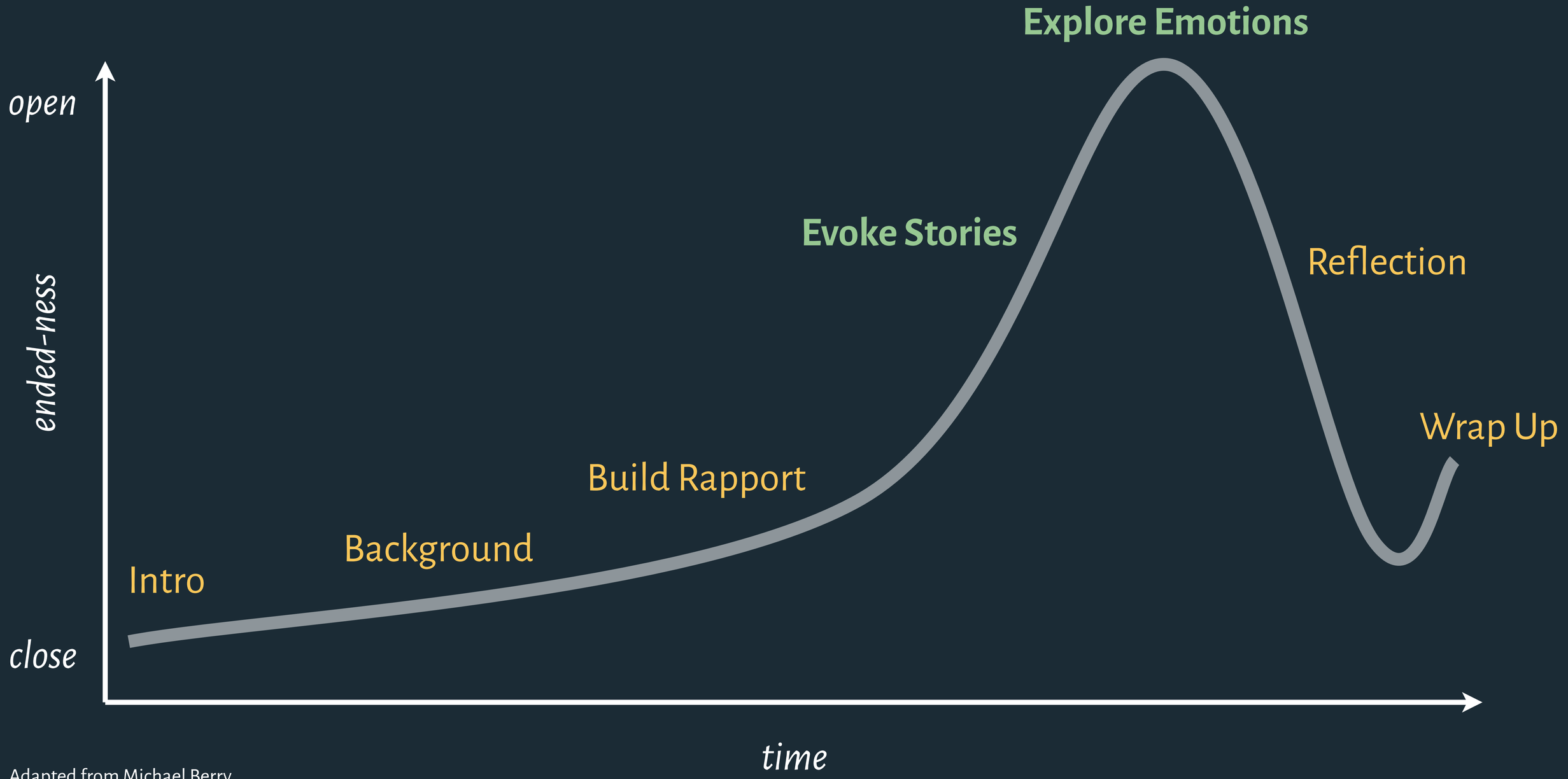
Changes Over Time: *"How are things different than they were last year?"*

Reflecting Back: *"So, what I hear you saying is... Is that right?"*

Language: *"Why do you call your office 'the command post'?"*

Adapted from Michael Berry.

Interviews



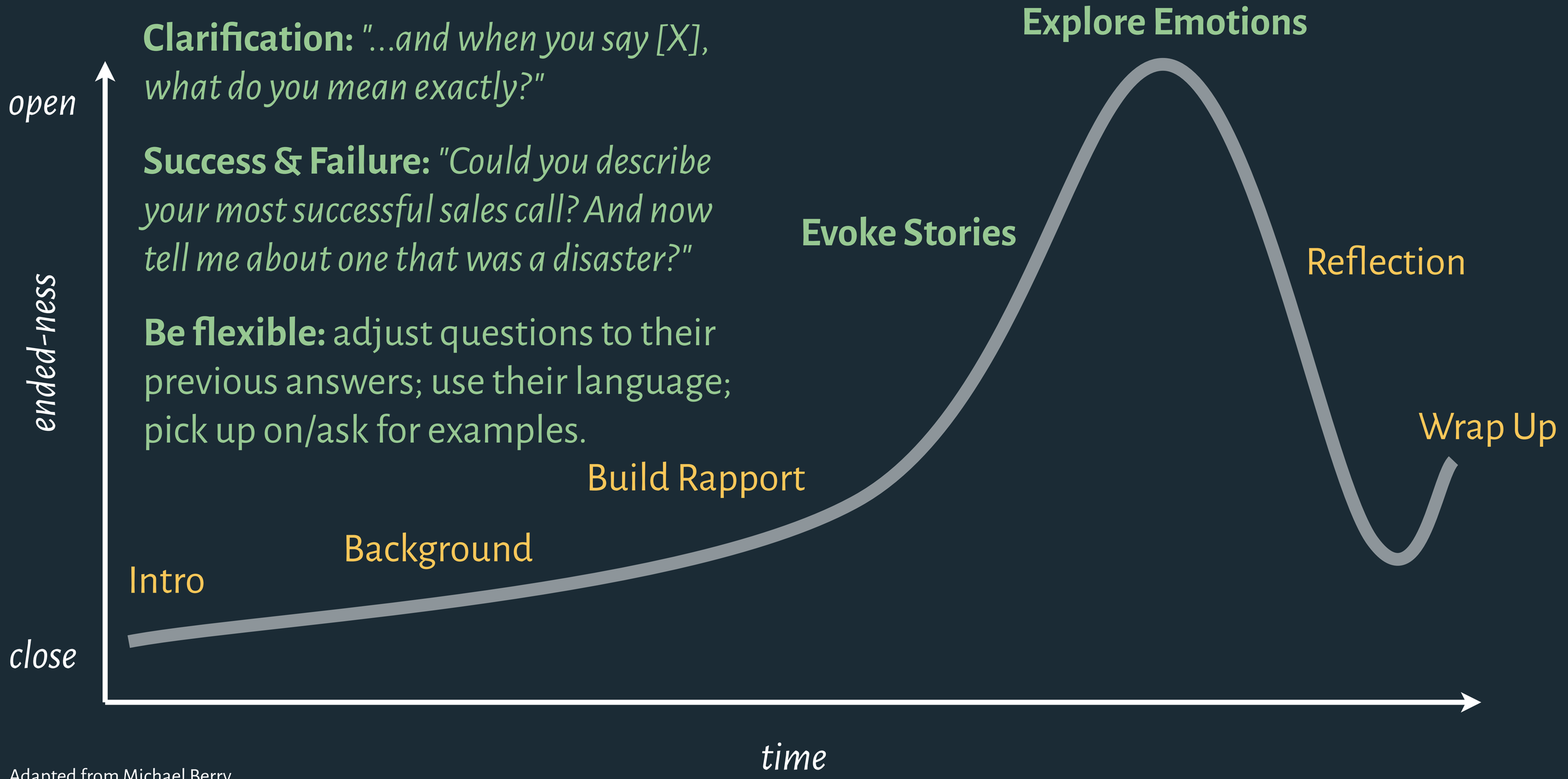
Adapted from Michael Berry.

Interviews

Clarification: *"...and when you say [X], what do you mean exactly?"*

Success & Failure: *"Could you describe your most successful sales call? And now tell me about one that was a disaster?"*

Be flexible: adjust questions to their previous answers; use their language; pick up on/ask for examples.



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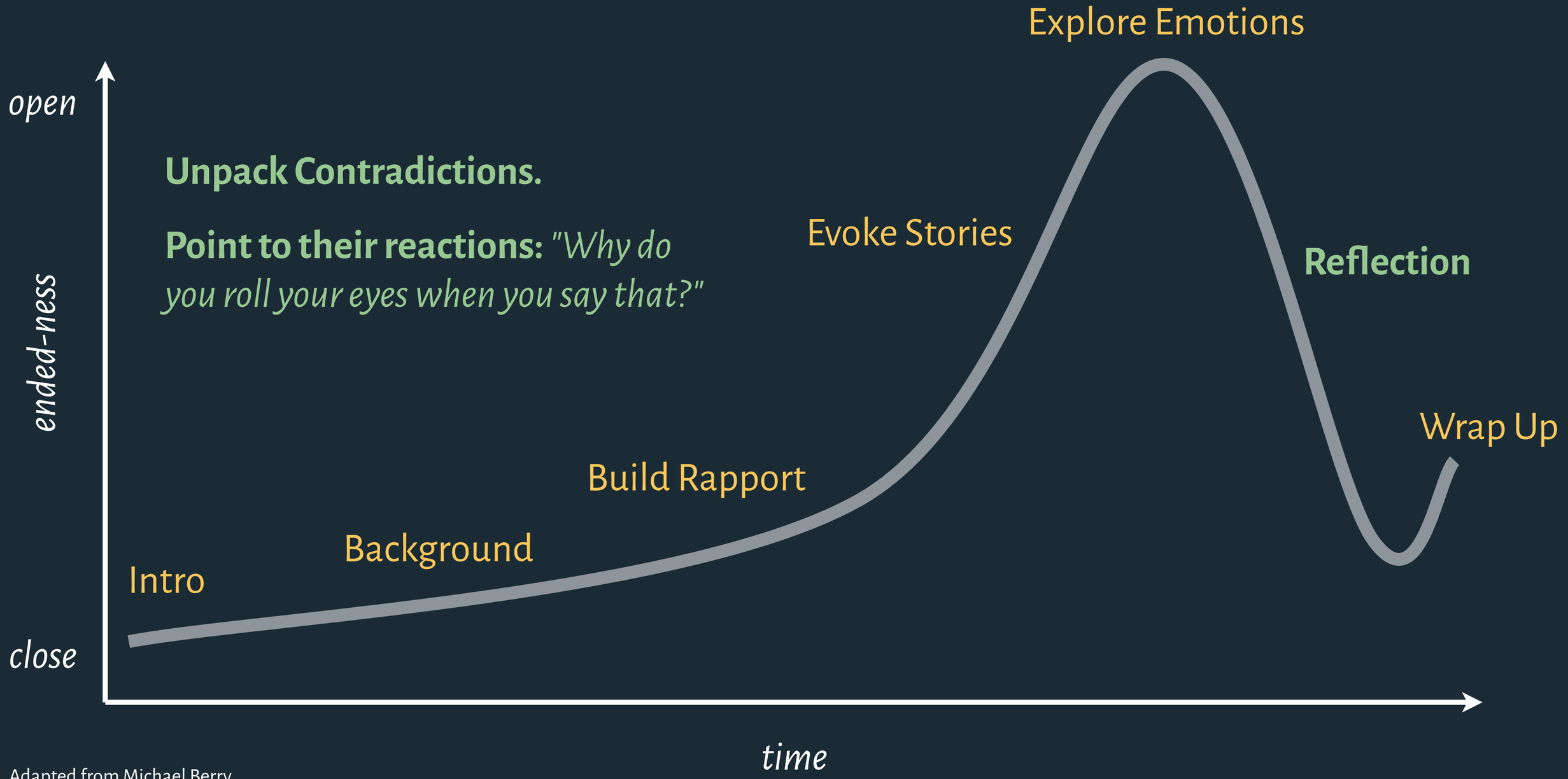

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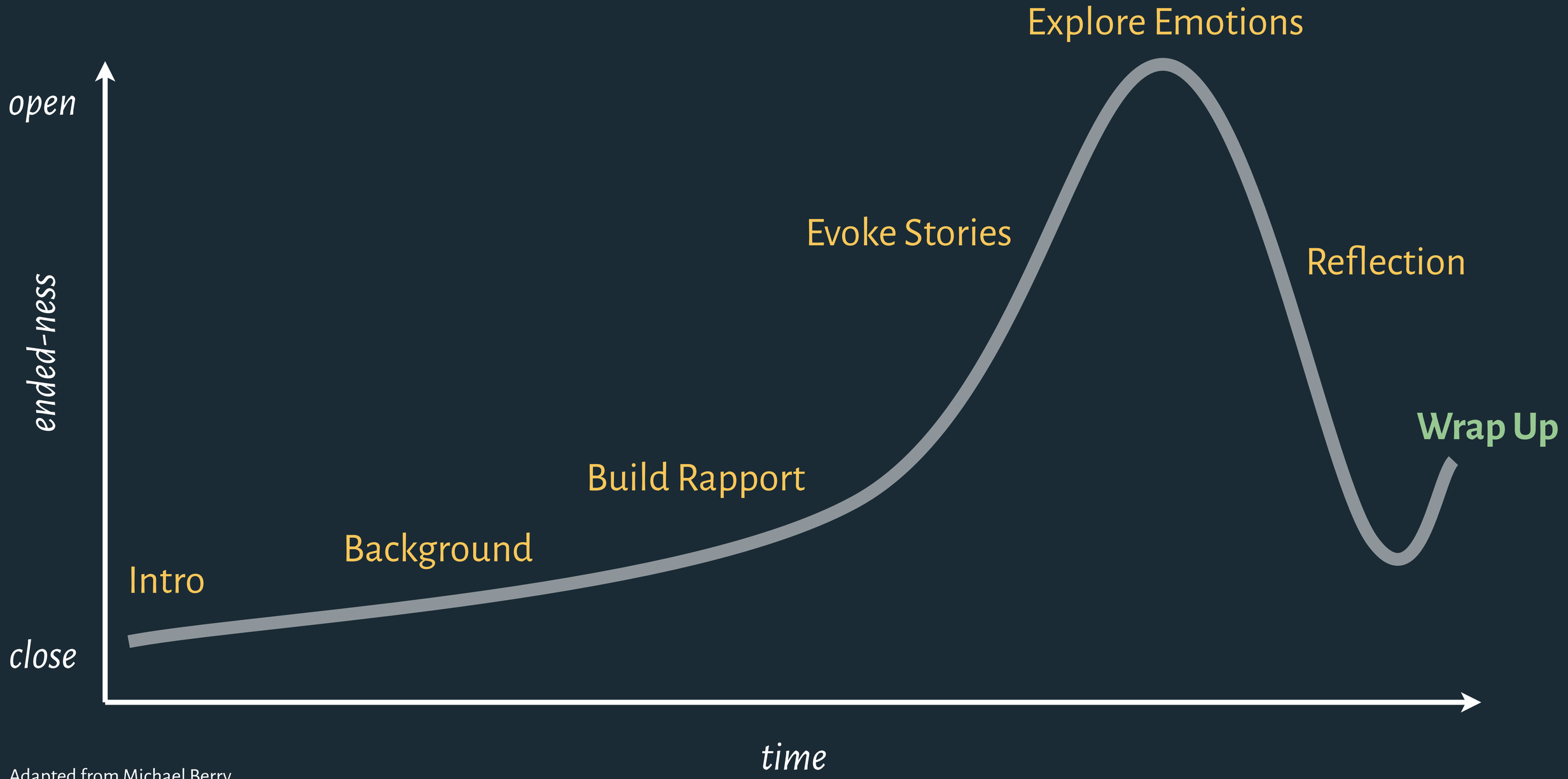

Adapted from Michael Berry.

(a little bit of)

Silence is golden

Common Pitfalls

Suggesting Answers: trust the question, ask it and stop talking.

Hypothetical Situations: we want real stories, not something generic they made up.

Binary or **Absolute Scales**: prevent follow-ups.

"Tell me a story about yourself"

How to Ask "Why"?

"Tell me more about"

"Tell me what you mean when you say [X]"

"[Last phrase the person said]?"

Gems

- You've uncovered **a surprise** or found what is **missing**.
- You can explain **why** people do **unusual things**.
- You want to **tell others** about what you have learned.

Ethical Considerations

Choosing Participants: representative of target users (current or future). Usually not MIT students!

Interview people on both sides of an interaction (e.g., Lyft/Uber).

Typically interview 6-12 people individually for 30-90 minutes.

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["Yours is better!" Participant Response Bias in HCI. Nicola Dell et al. CHI 2012]

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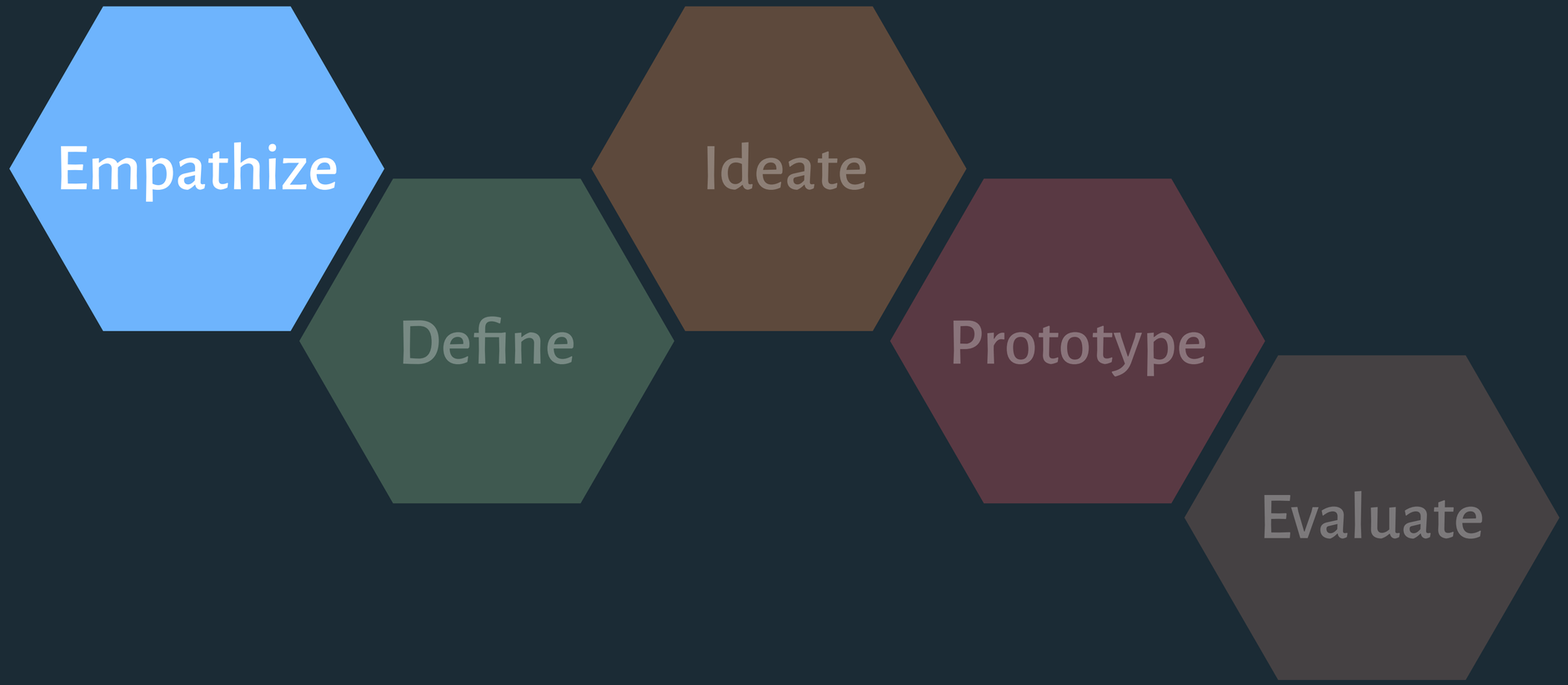

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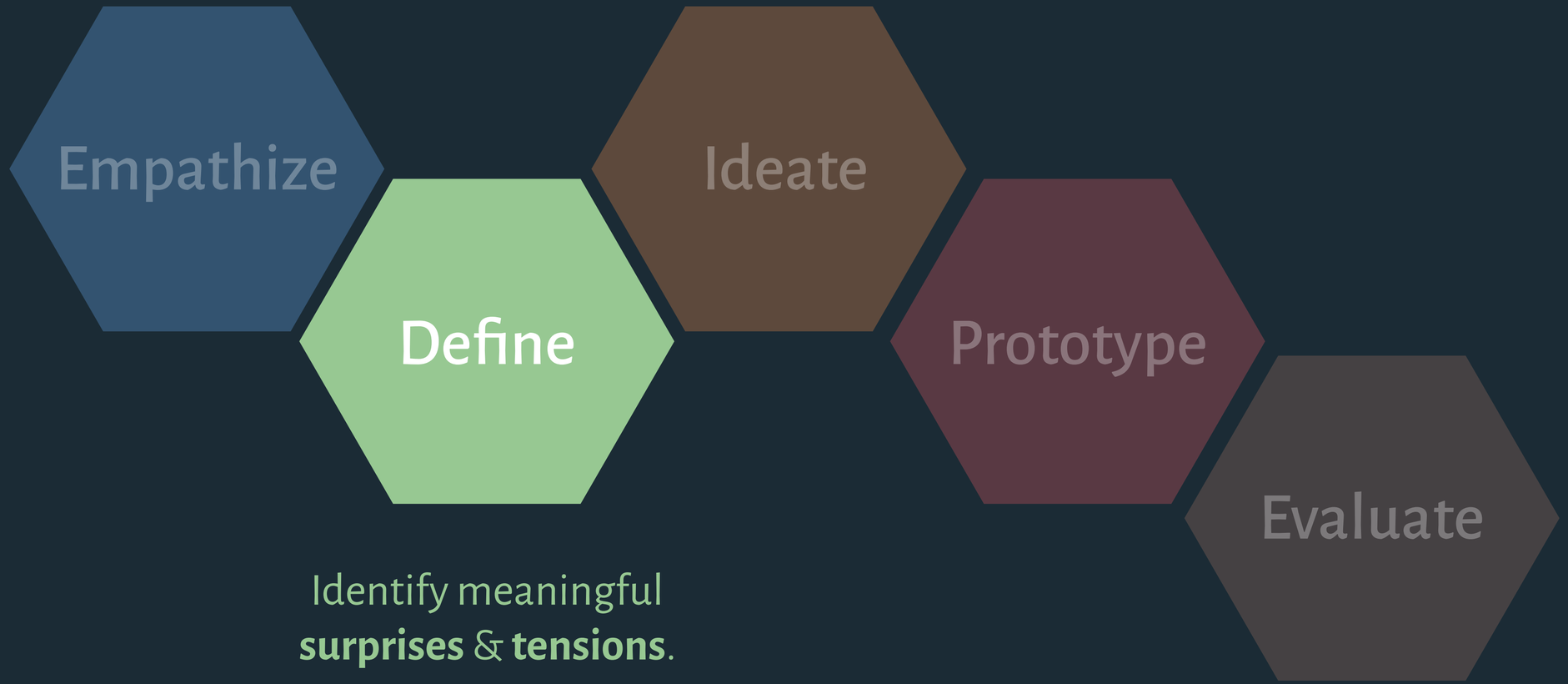

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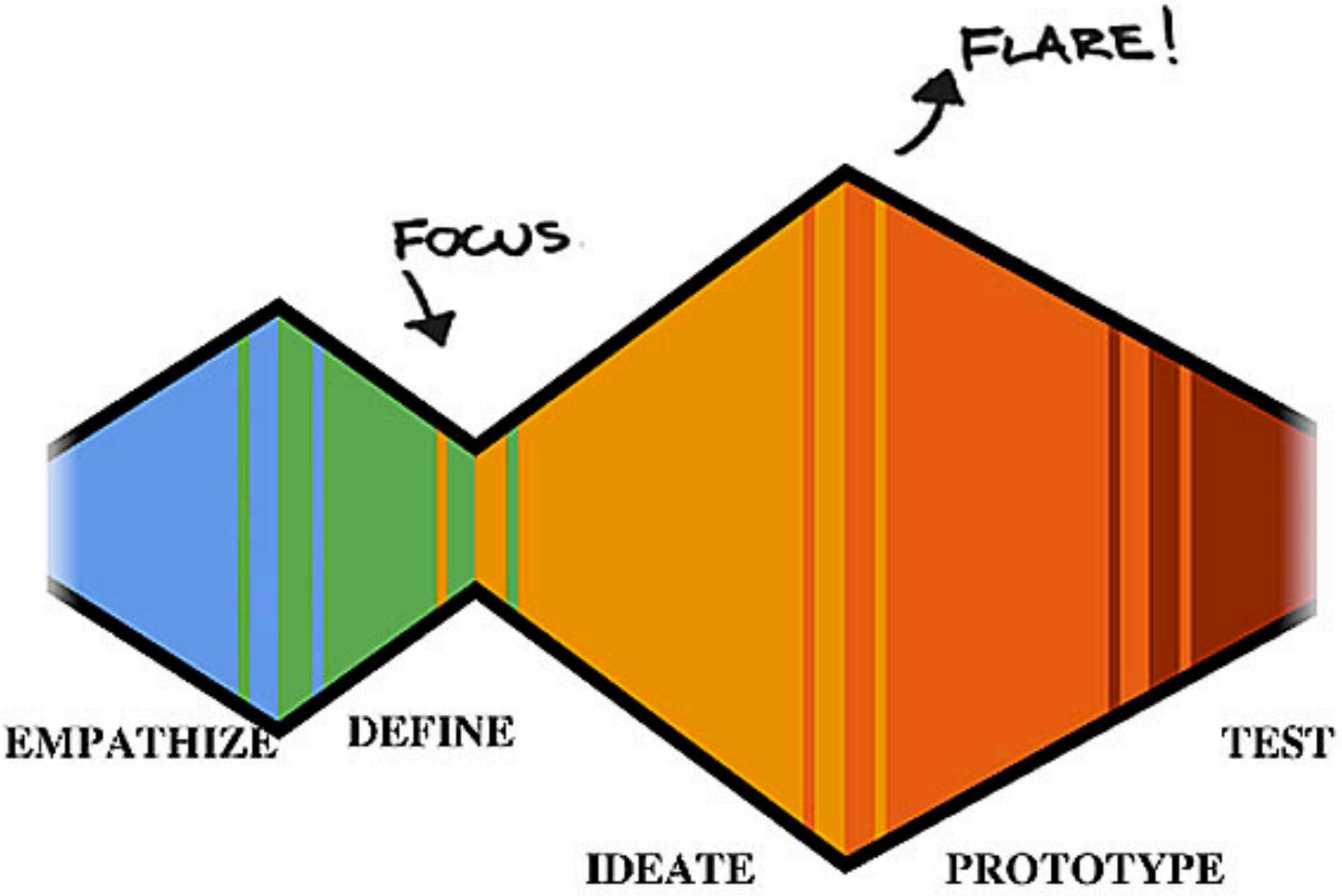
FLARE!
FOCUS
EMPATHIZE
DEFINE
IDEATE
PROTOTYPE
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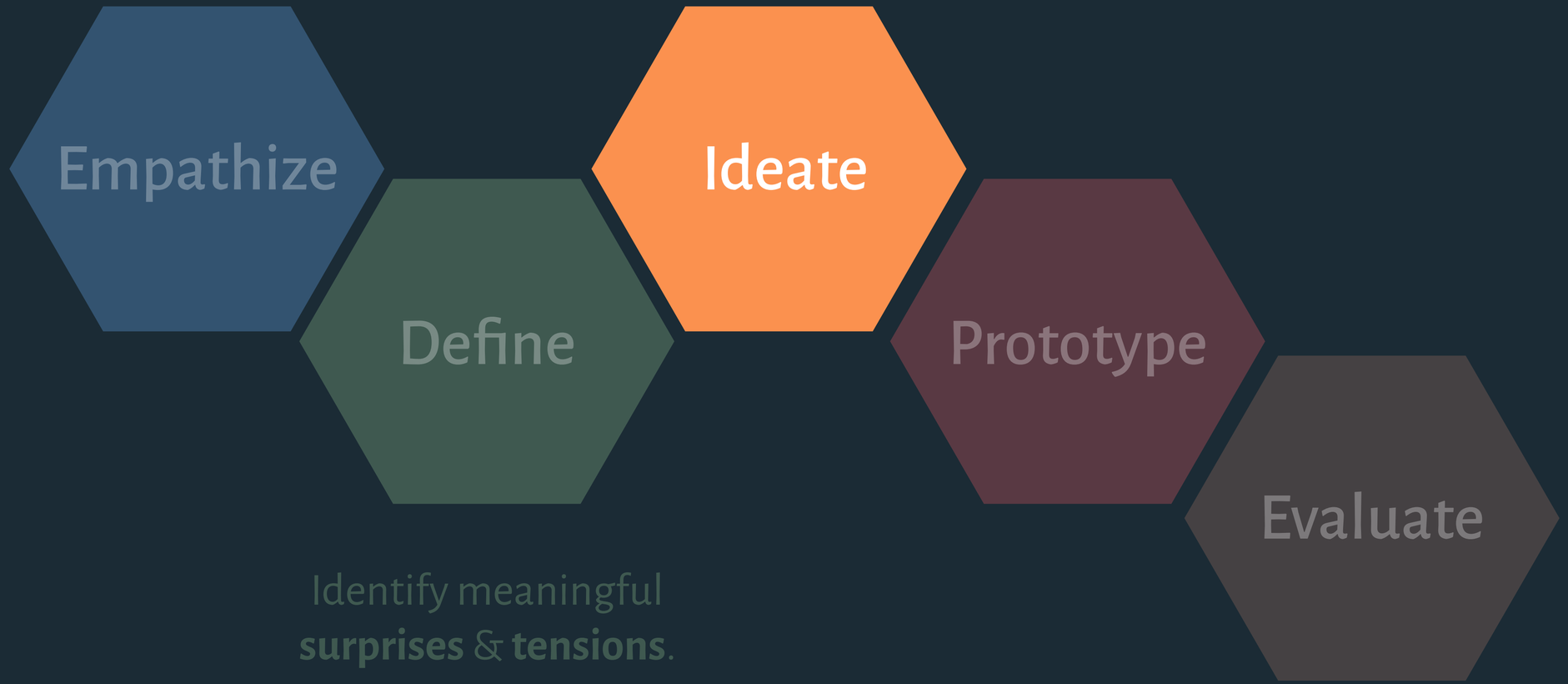

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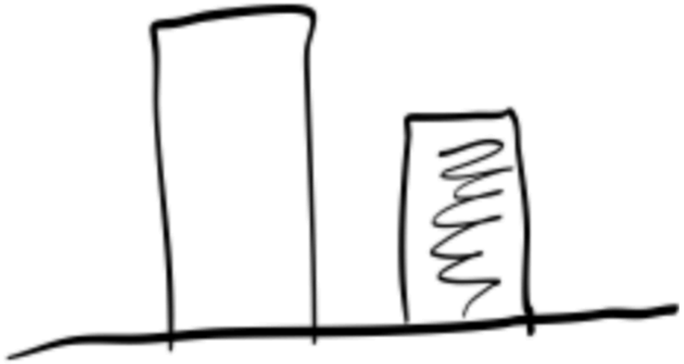
Activity!

In **1 minute**, sketch as many ways to visualize these two numbers as possible:

75 37

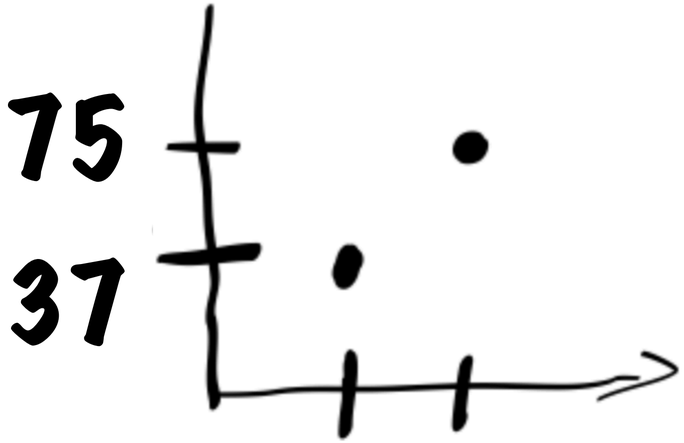
Most Likely Results

Pie Charts



Bar Charts

Scatterplot



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Arabic Numbers

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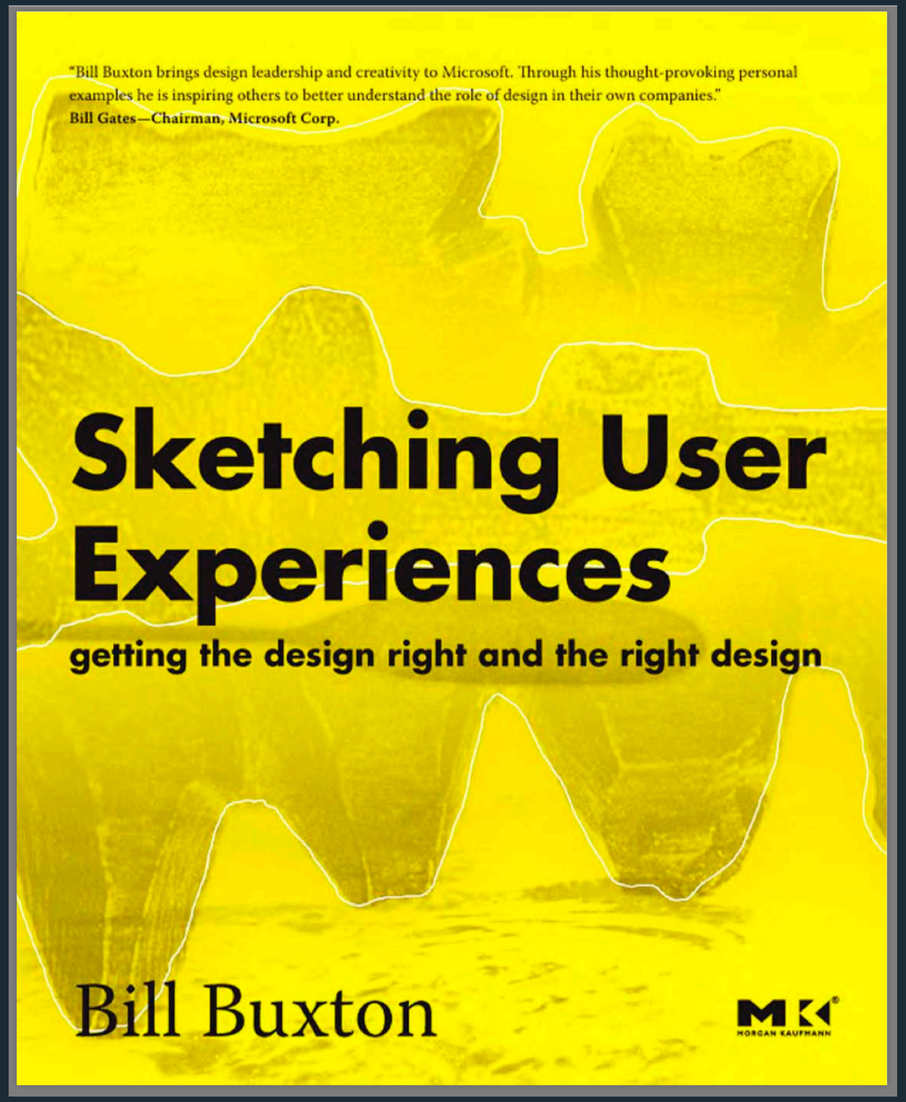

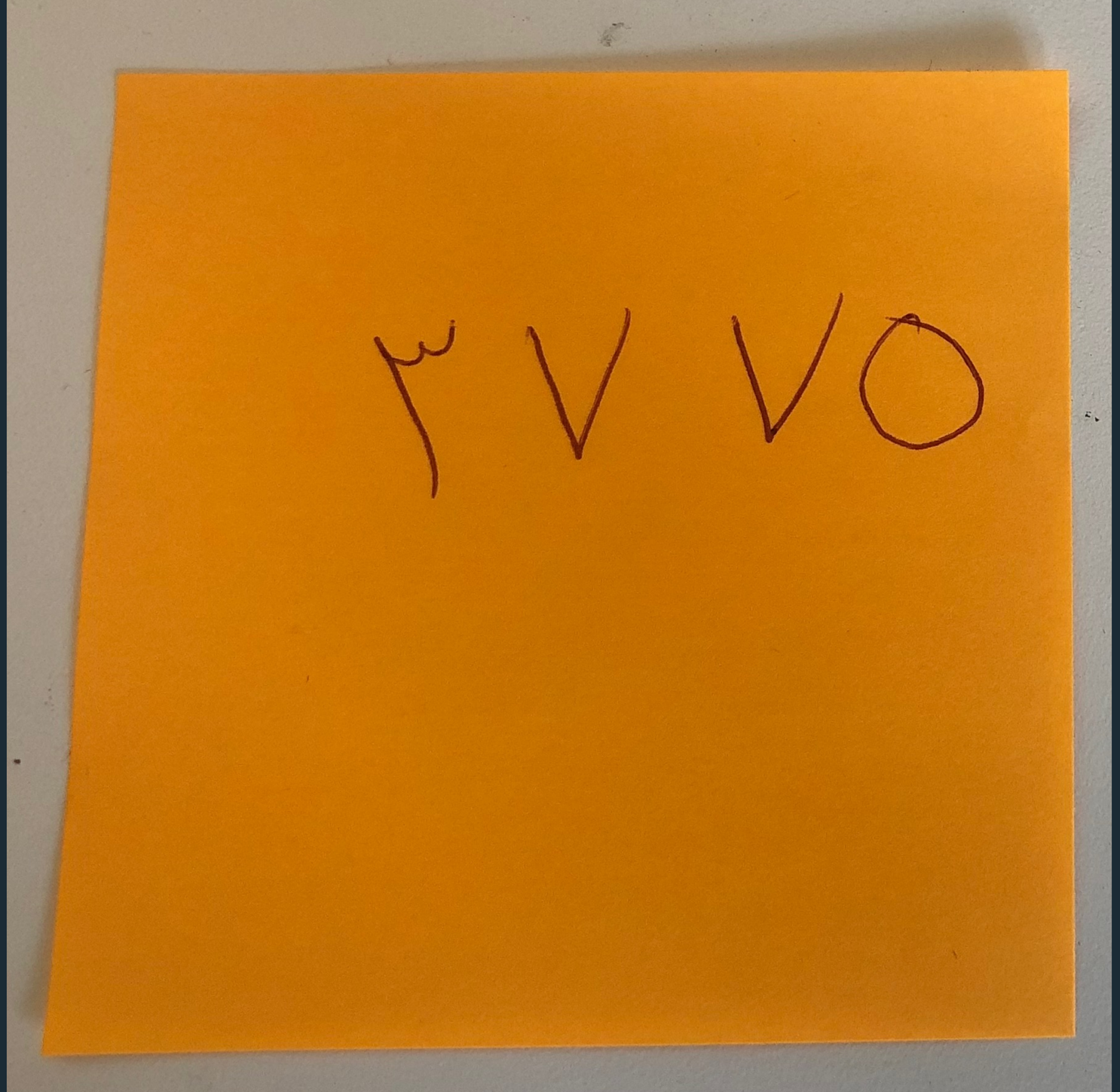
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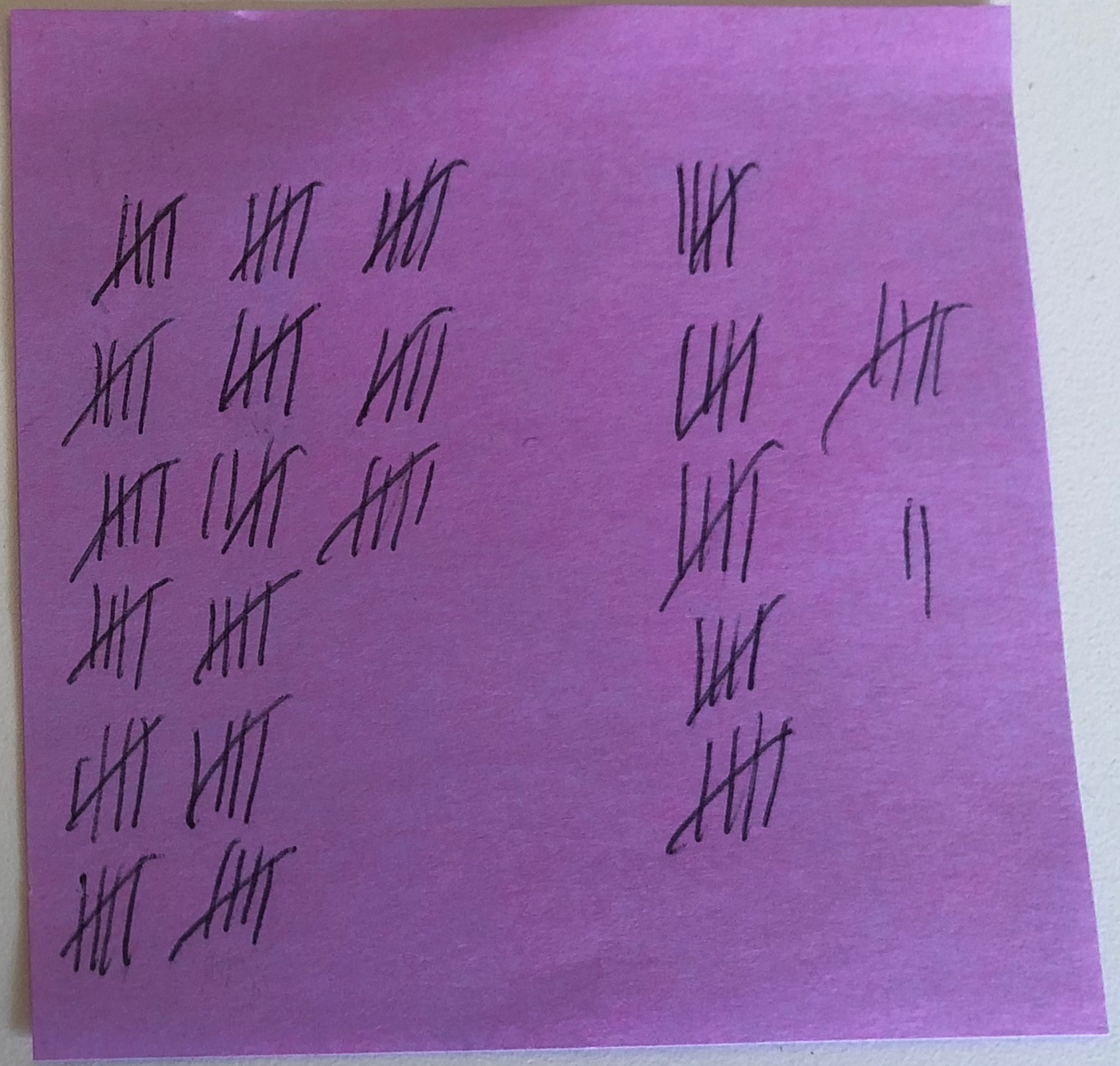
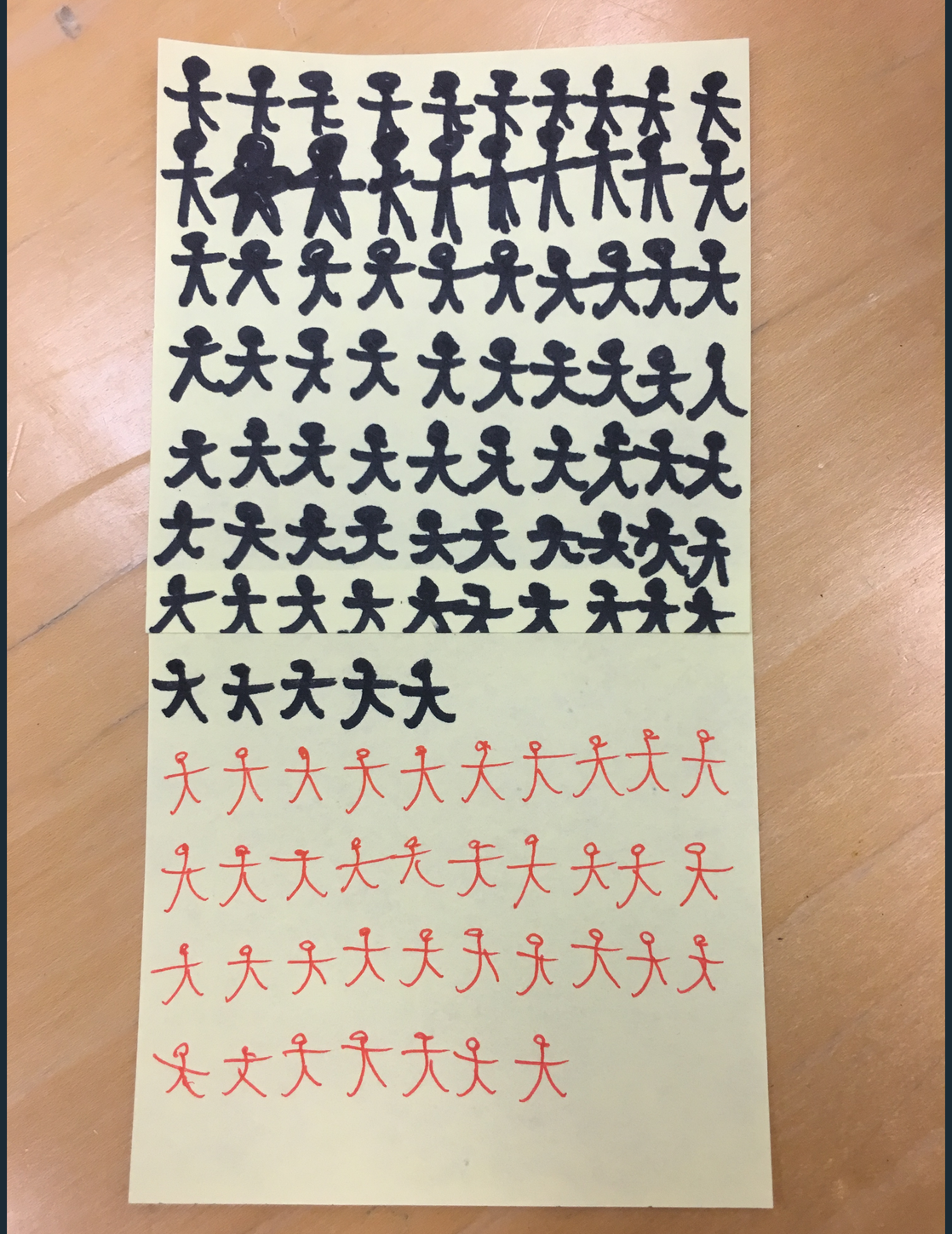


Examples from Jon Schwabish.



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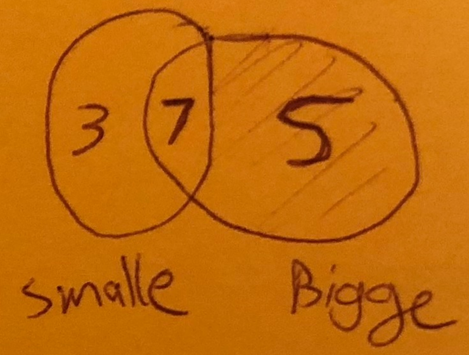

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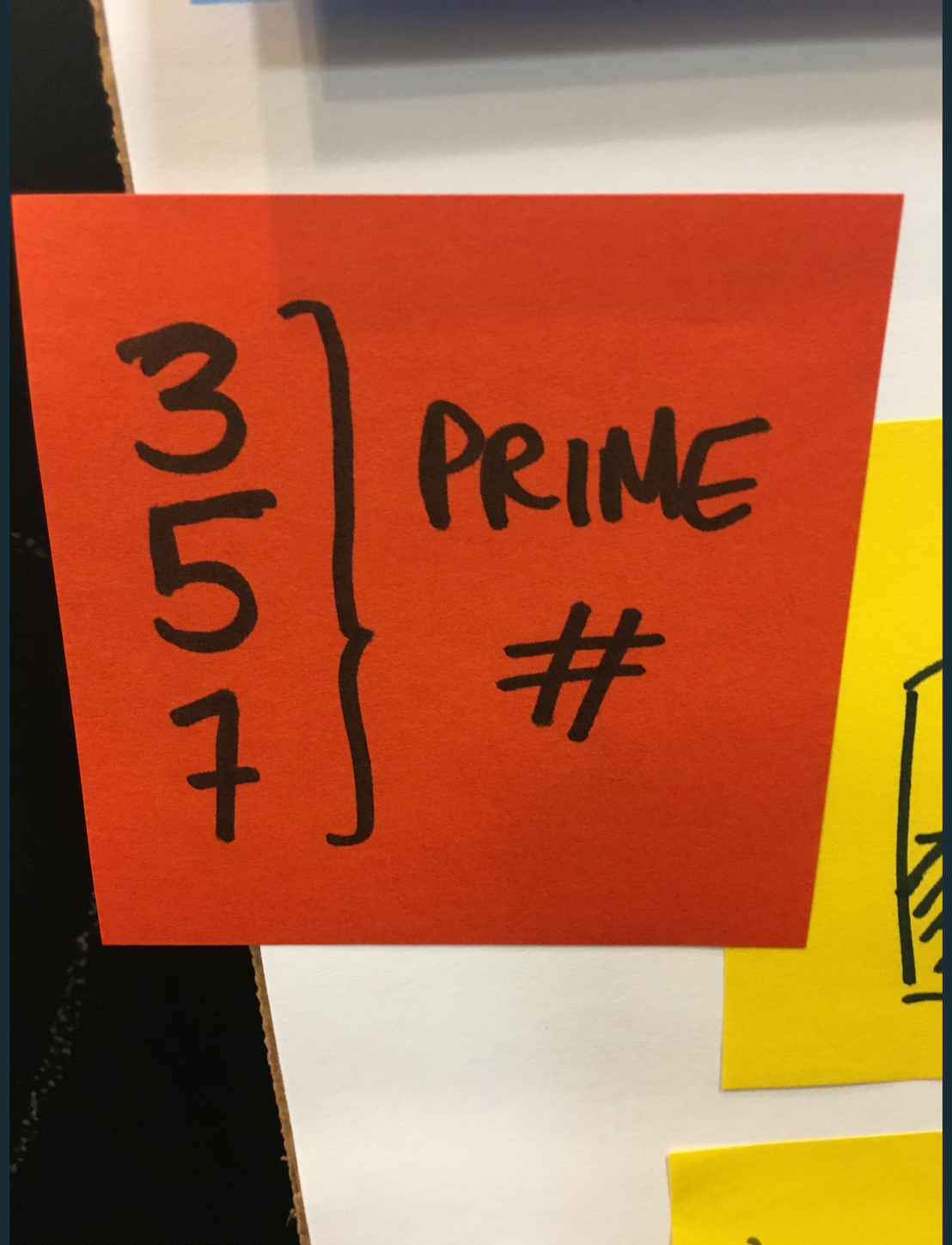

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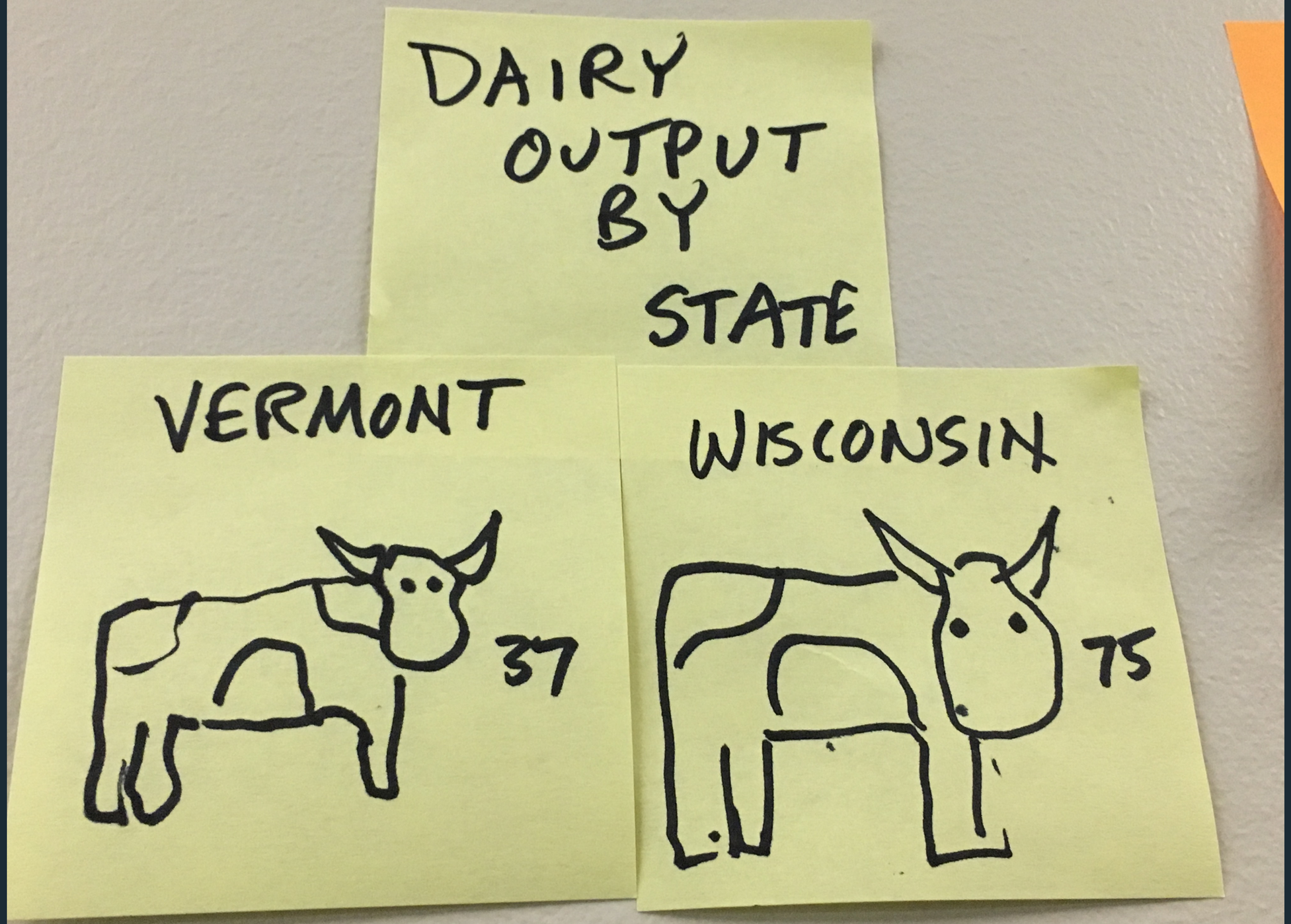

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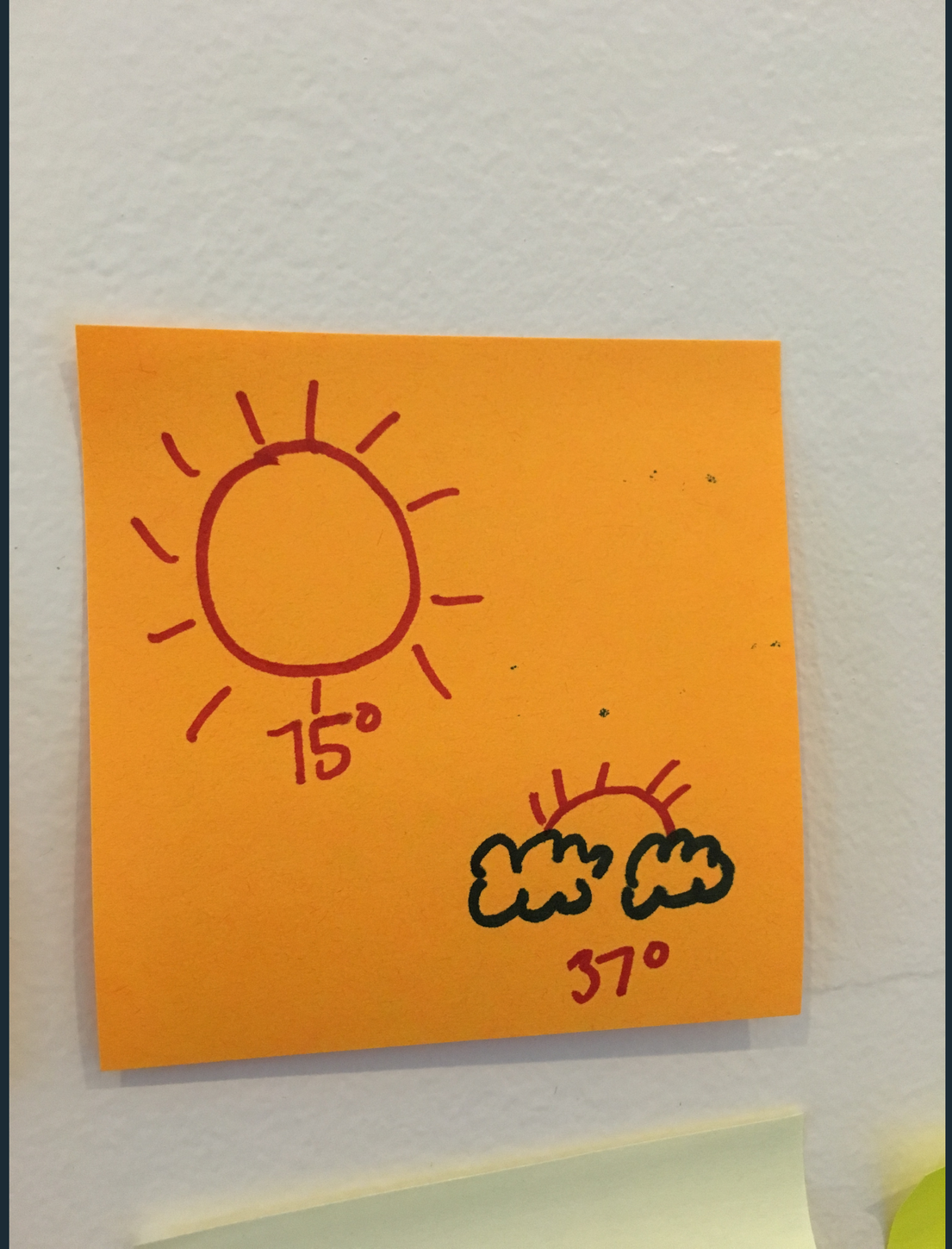

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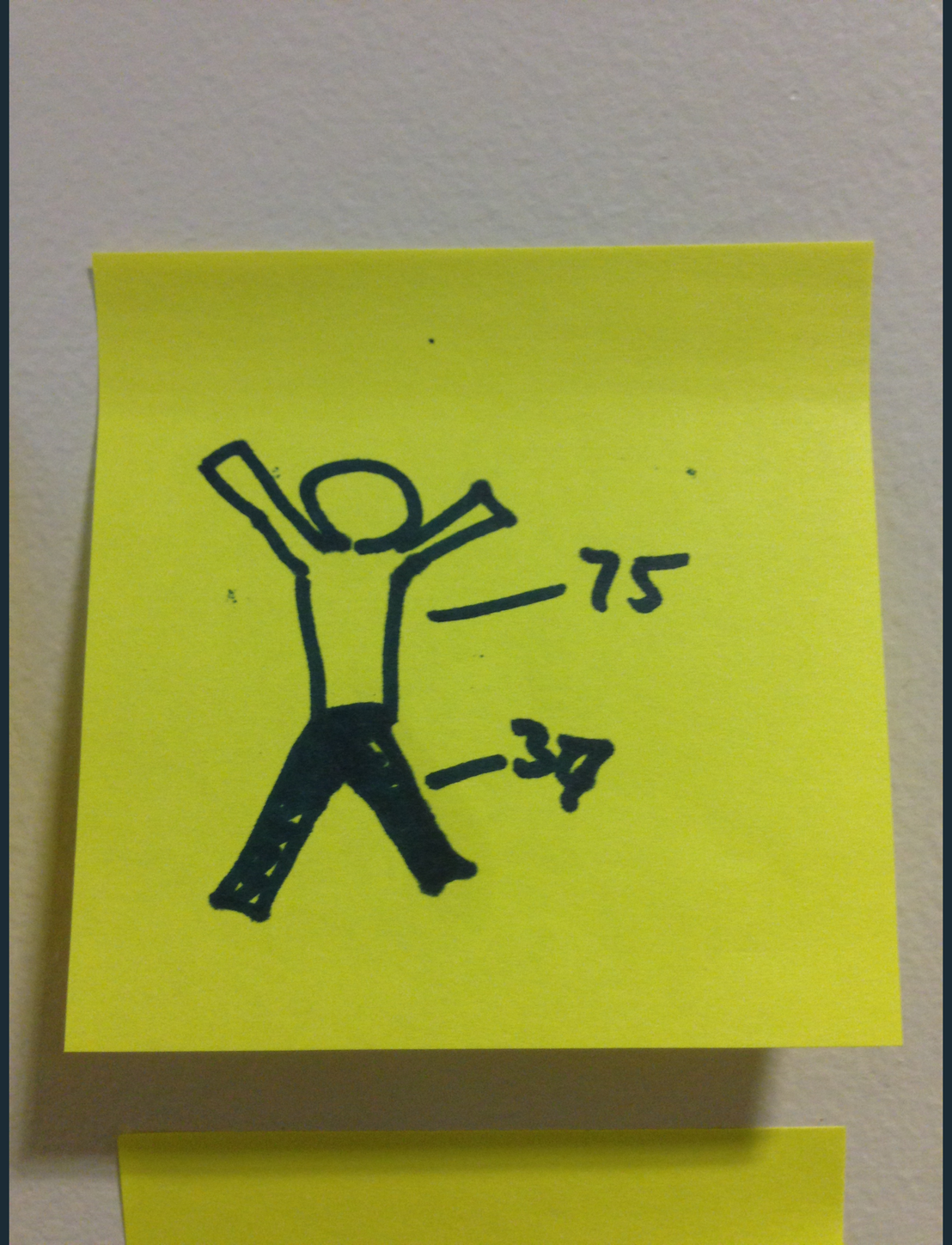

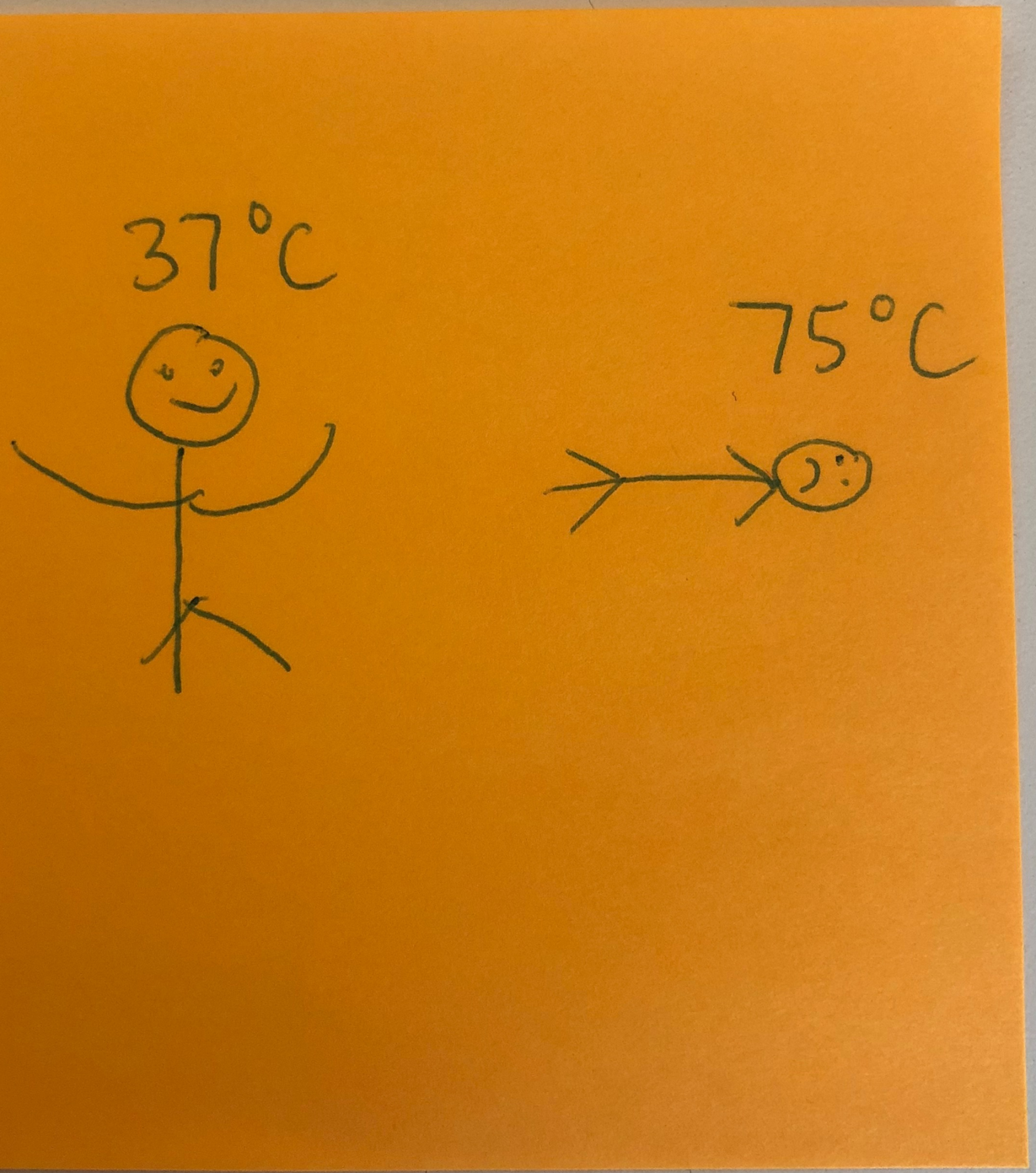
37°C
75°C

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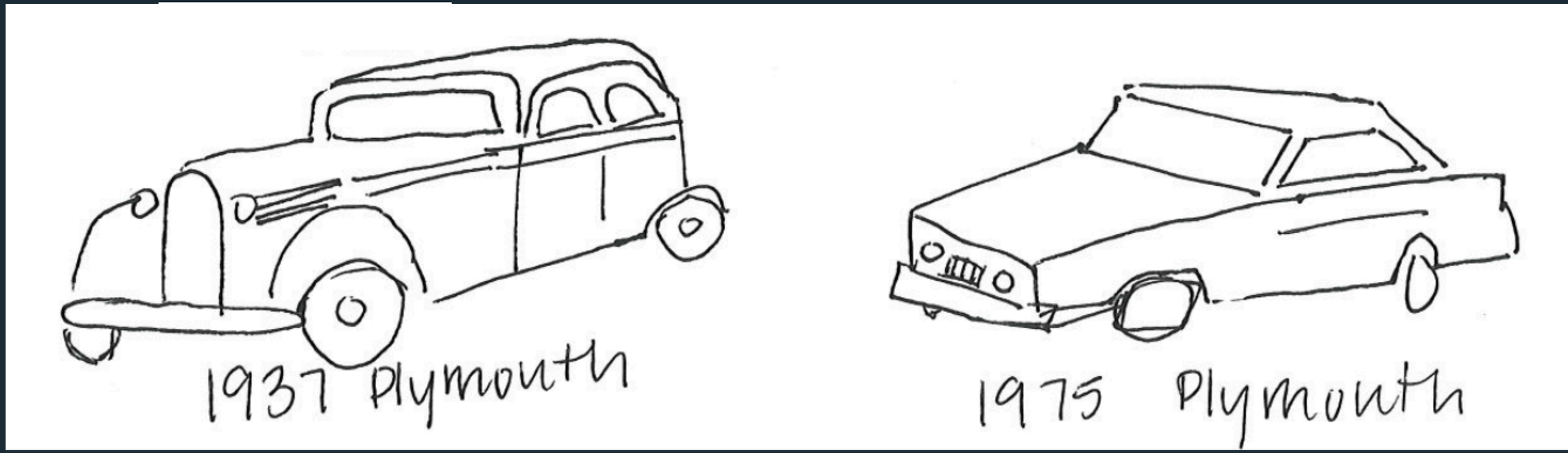

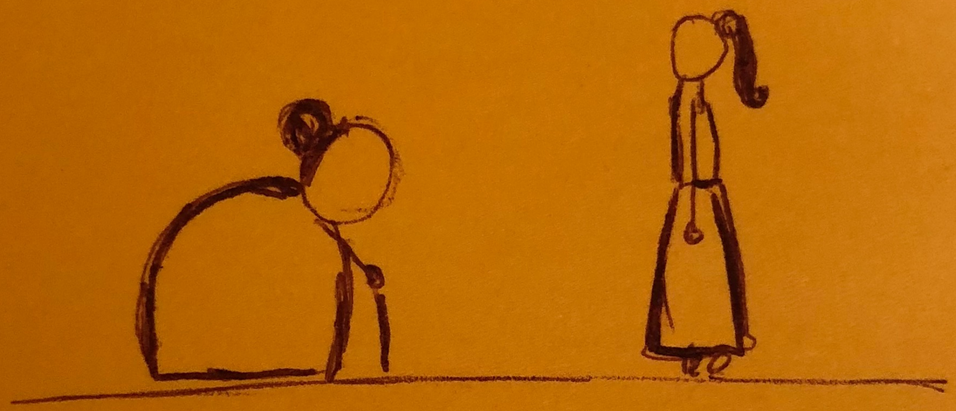

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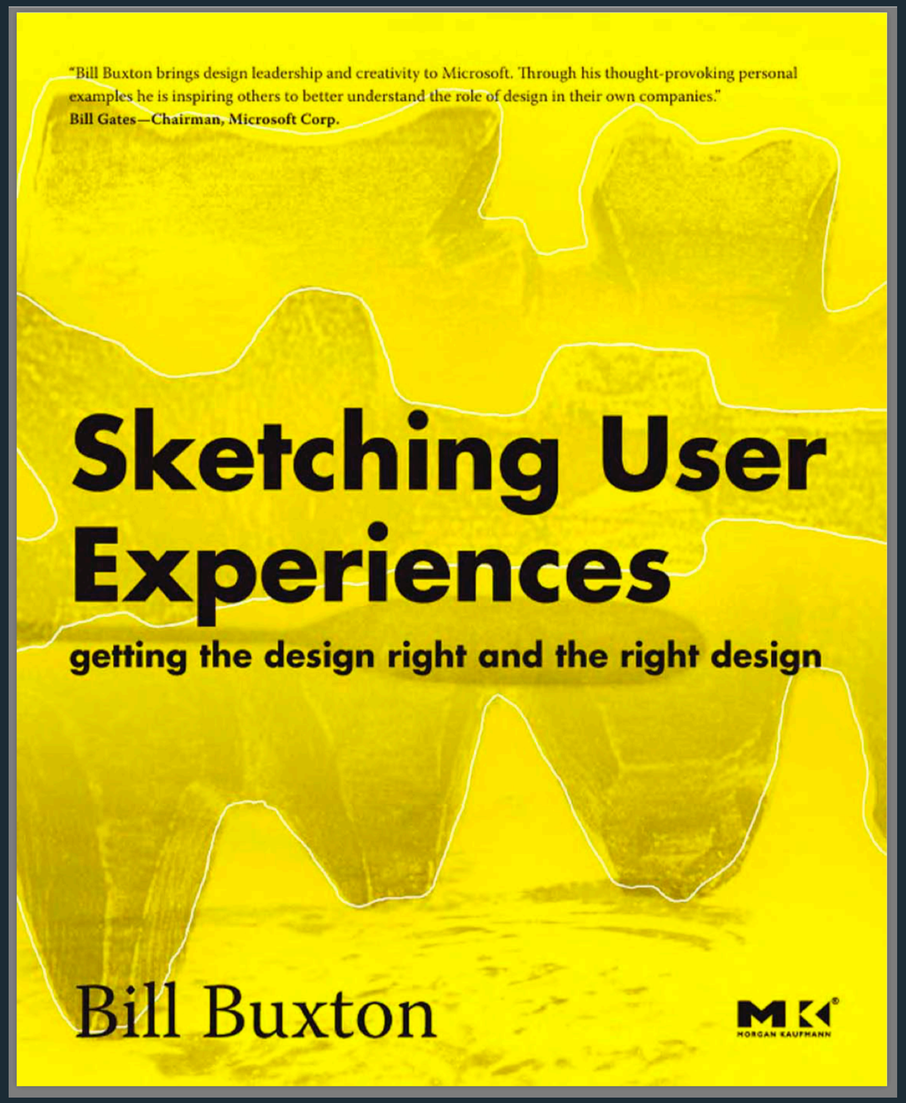

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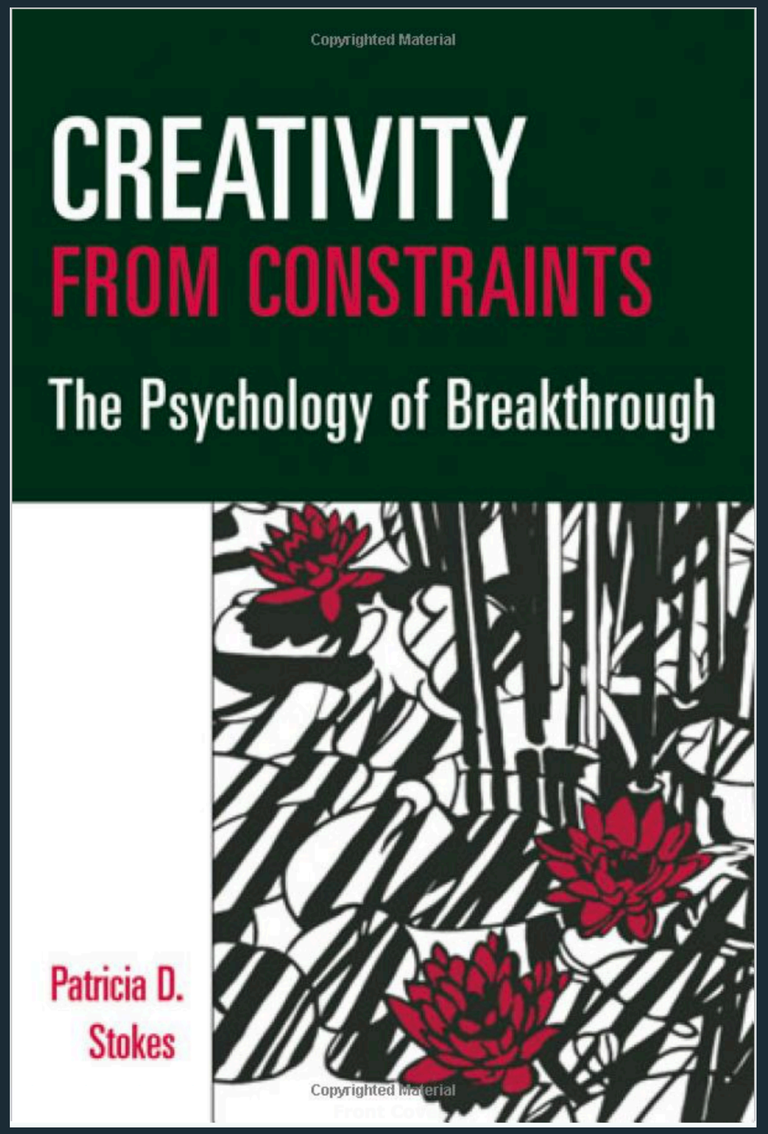
introduce a constraint: impose new structures to the problem to spur creativity

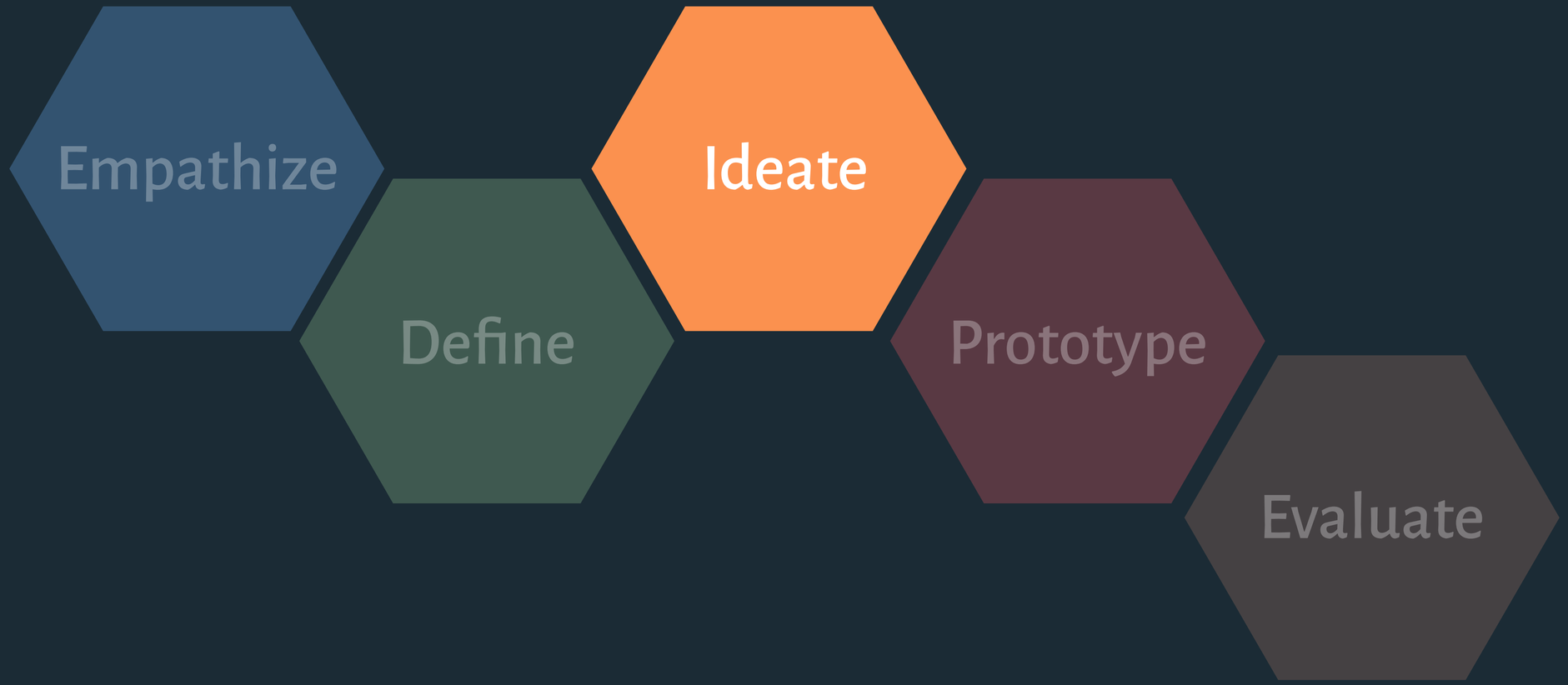


Activity!

In **5 minutes**, sketch as many **new visualizations** as possible that are different from your previous ideas. If you're stuck, introduce a constraint -- e.g., one line, only black/white, only round objects, etc.

75 37

Take a photo of all your sketches and upload to **yellkey.com/lot**



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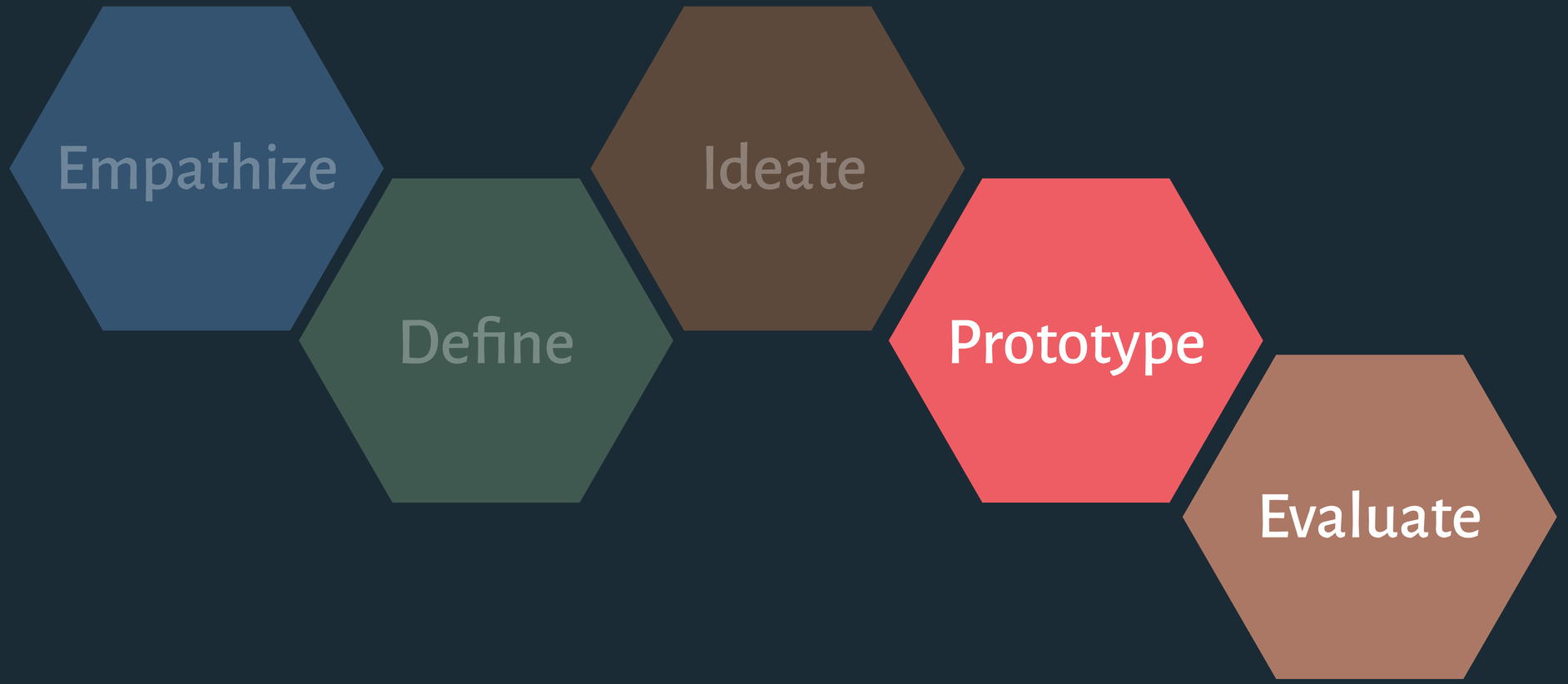

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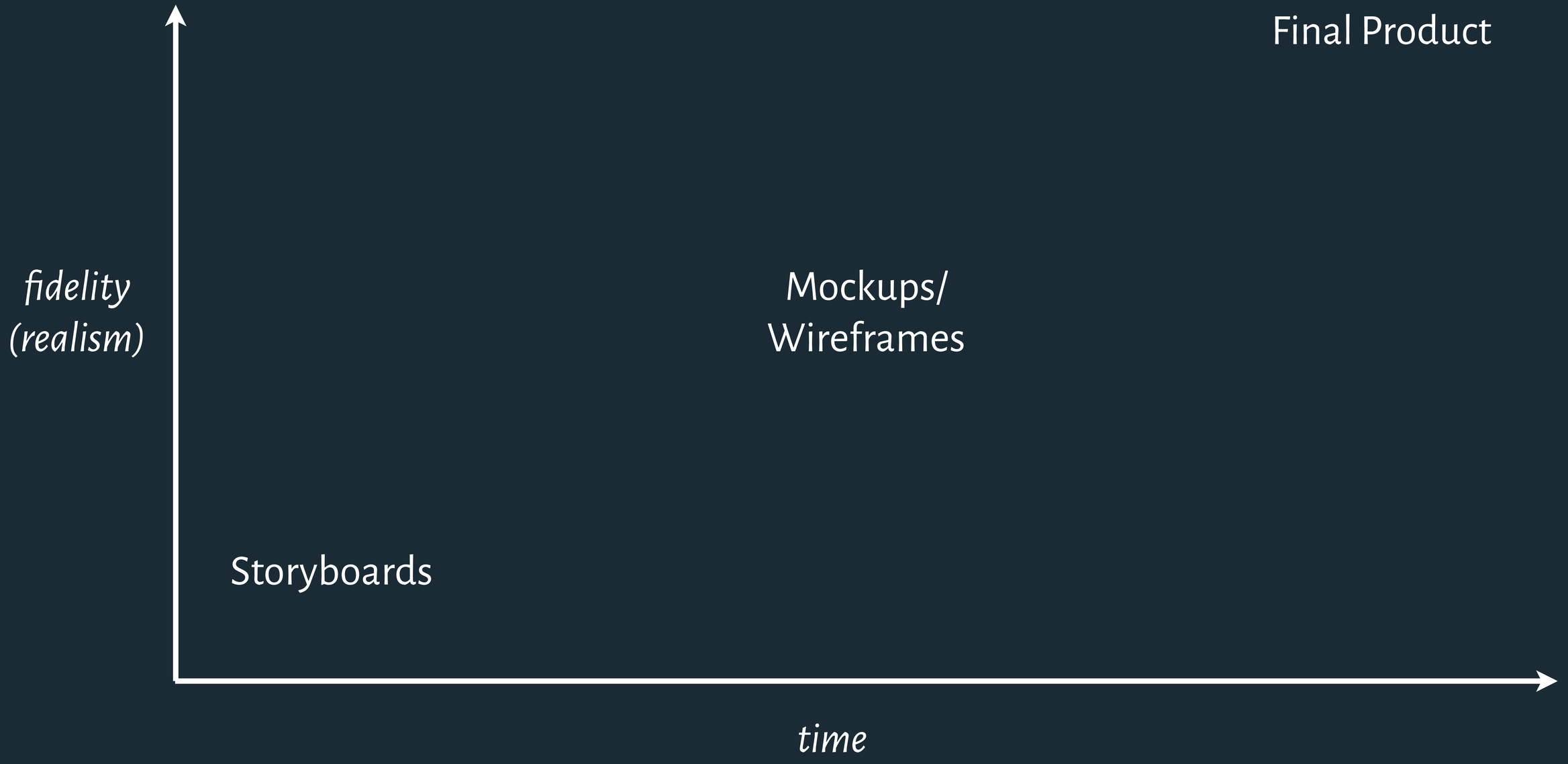
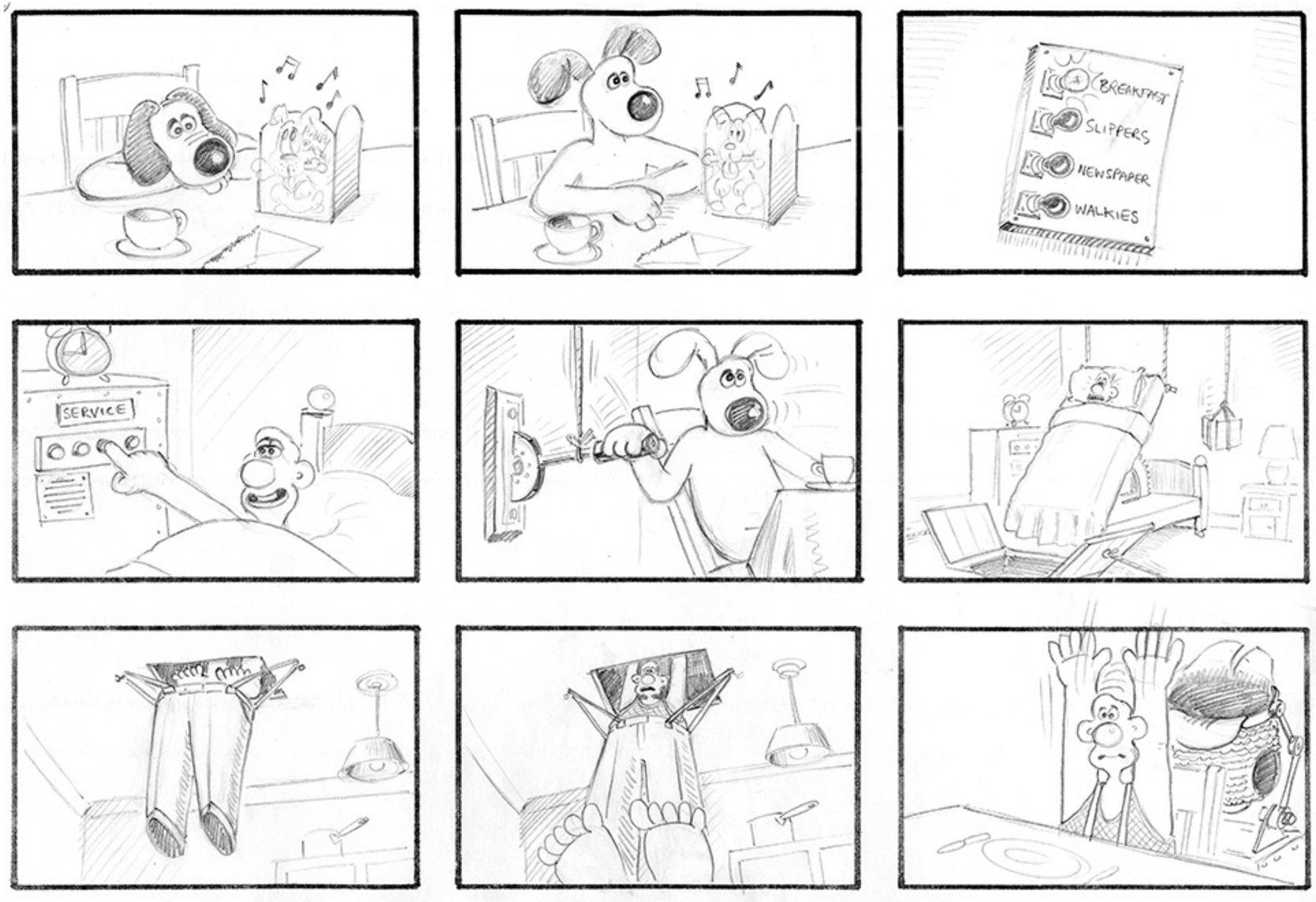
Why build prototypes?

Prototypes facilitate conversation.

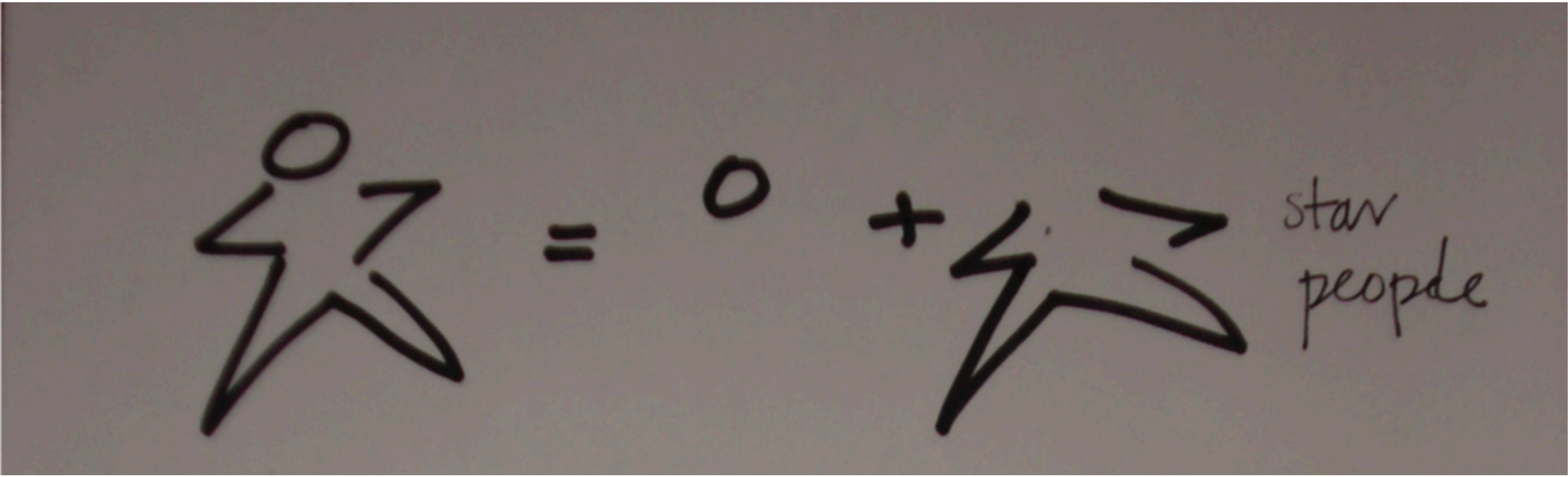

Final Product
fidelity
(realism)
Mockups/
Wireframes
Storyboards
time

Storyboards



https://www.aardman.com/events/story-boarding/

Storyboards are *not* about making pretty pictures.



From Amal Dar Aziz, http://d.ucsd.edu/story/

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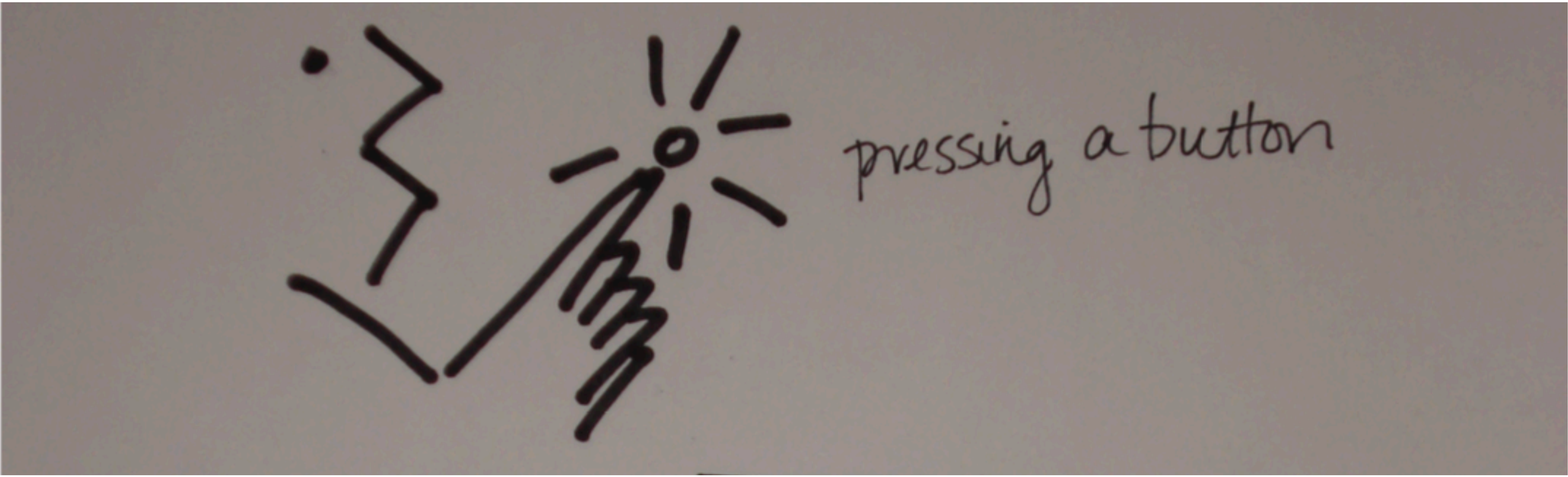

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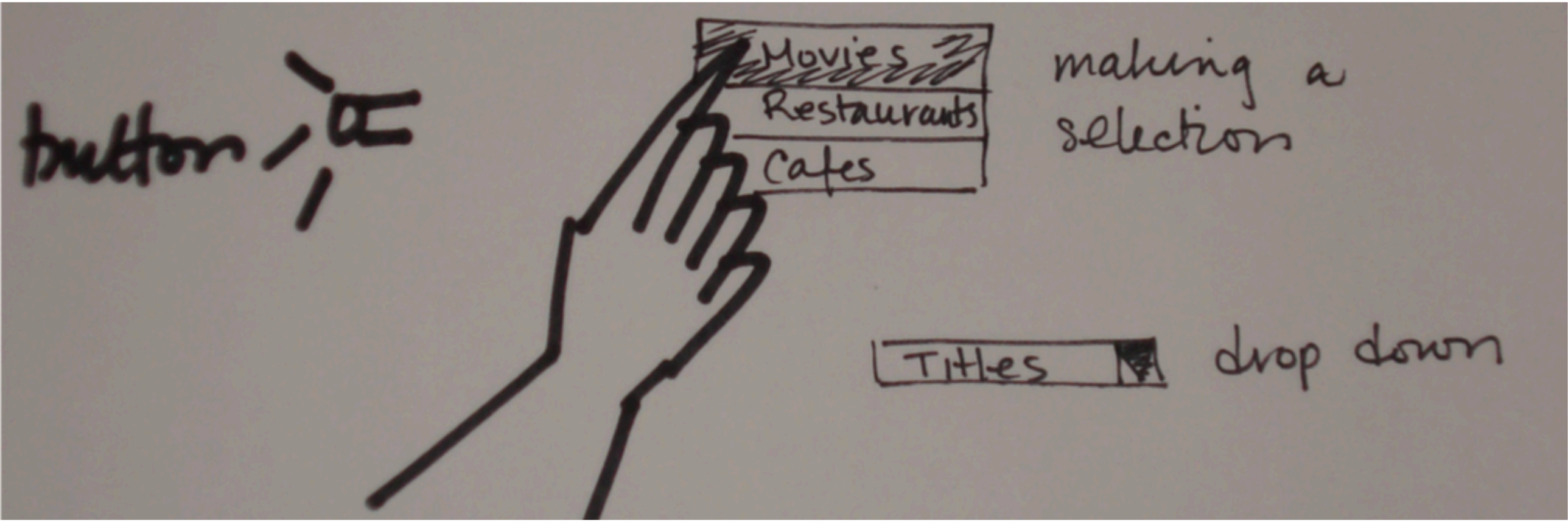

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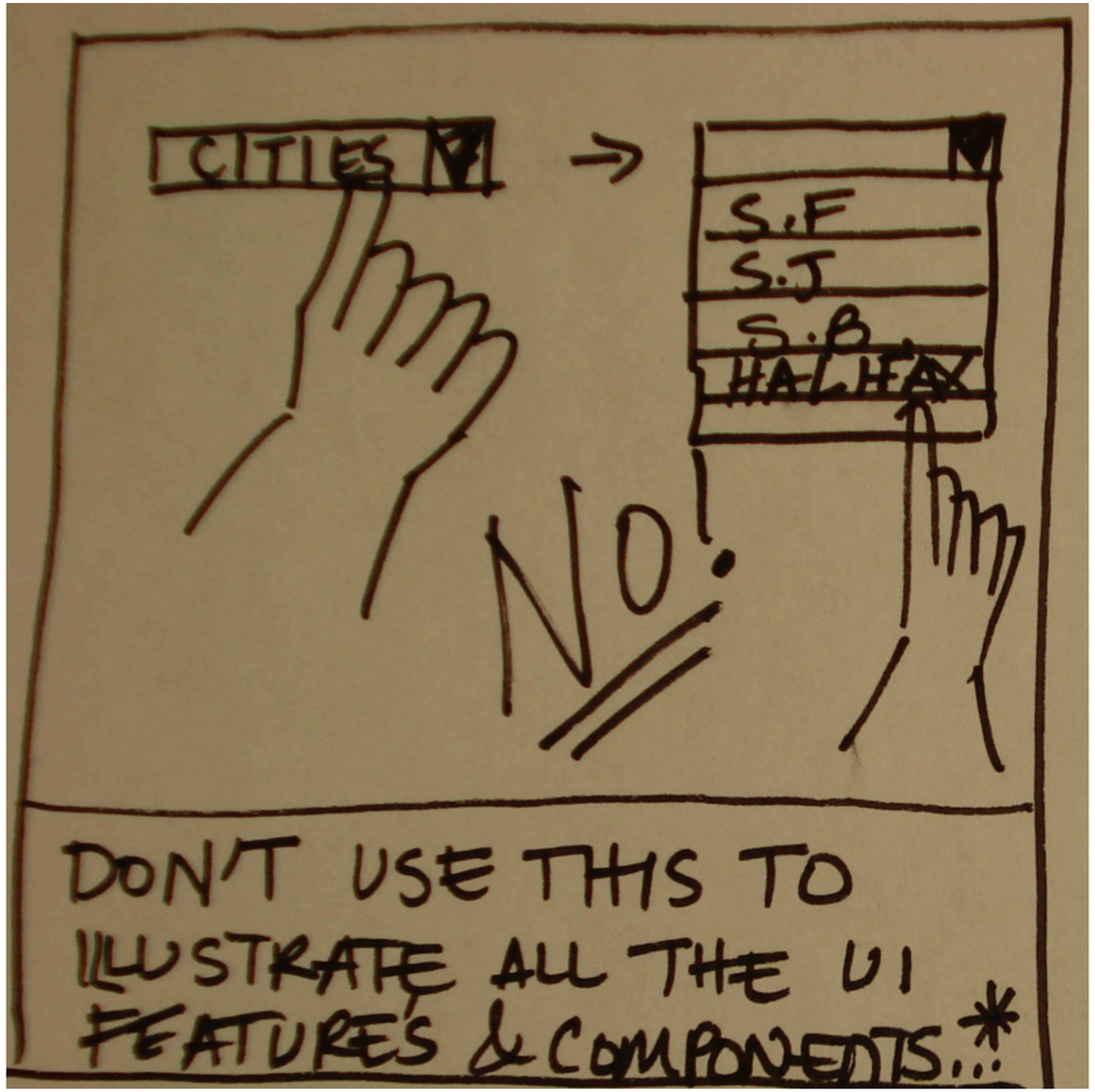
Storyboards are *not* about UI design details.



From Amal Dar Aziz, http://d.ucsd.edu/story/

Storyboards

=

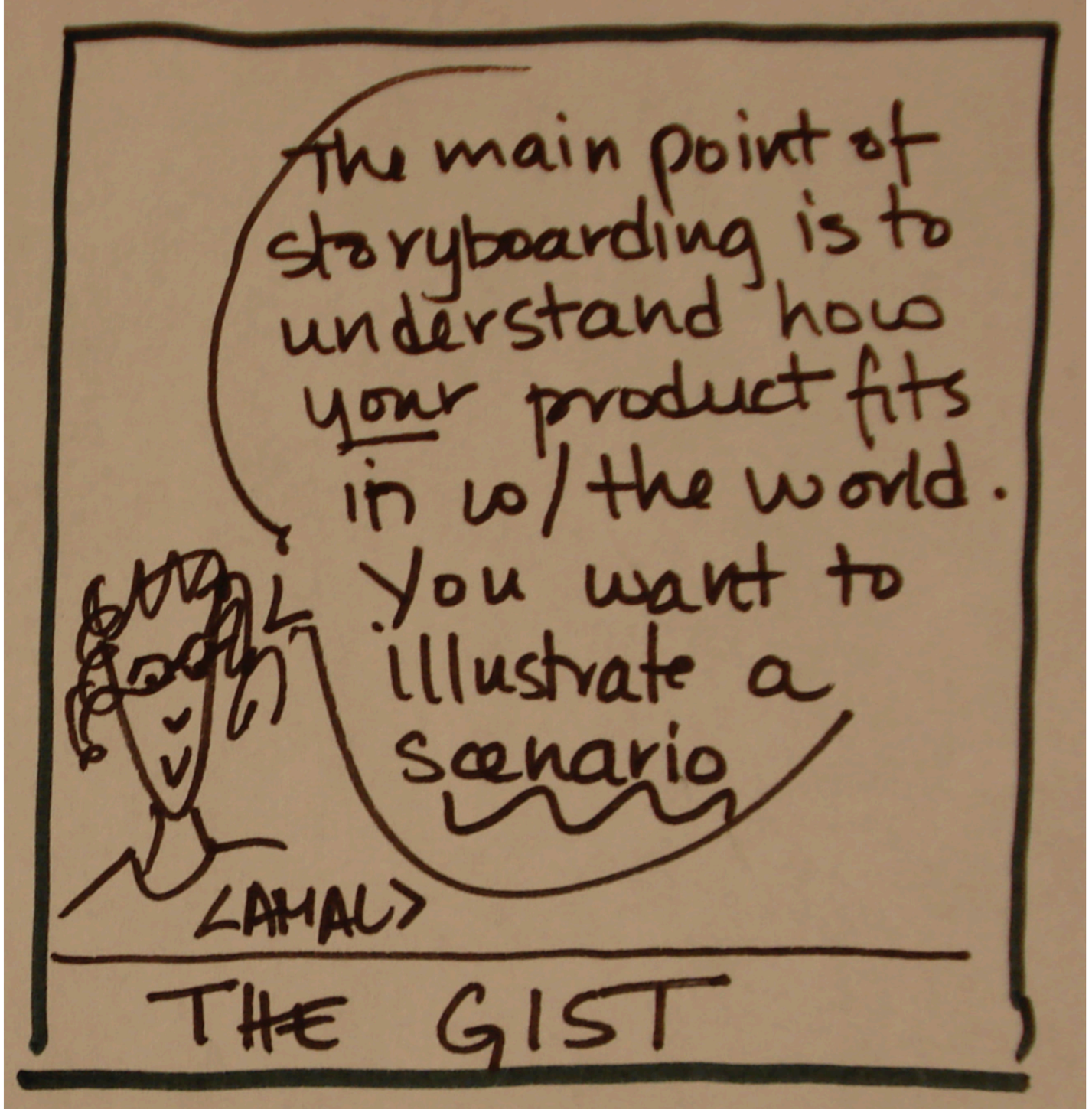
Setting

+

Sequence

+

Satisfaction



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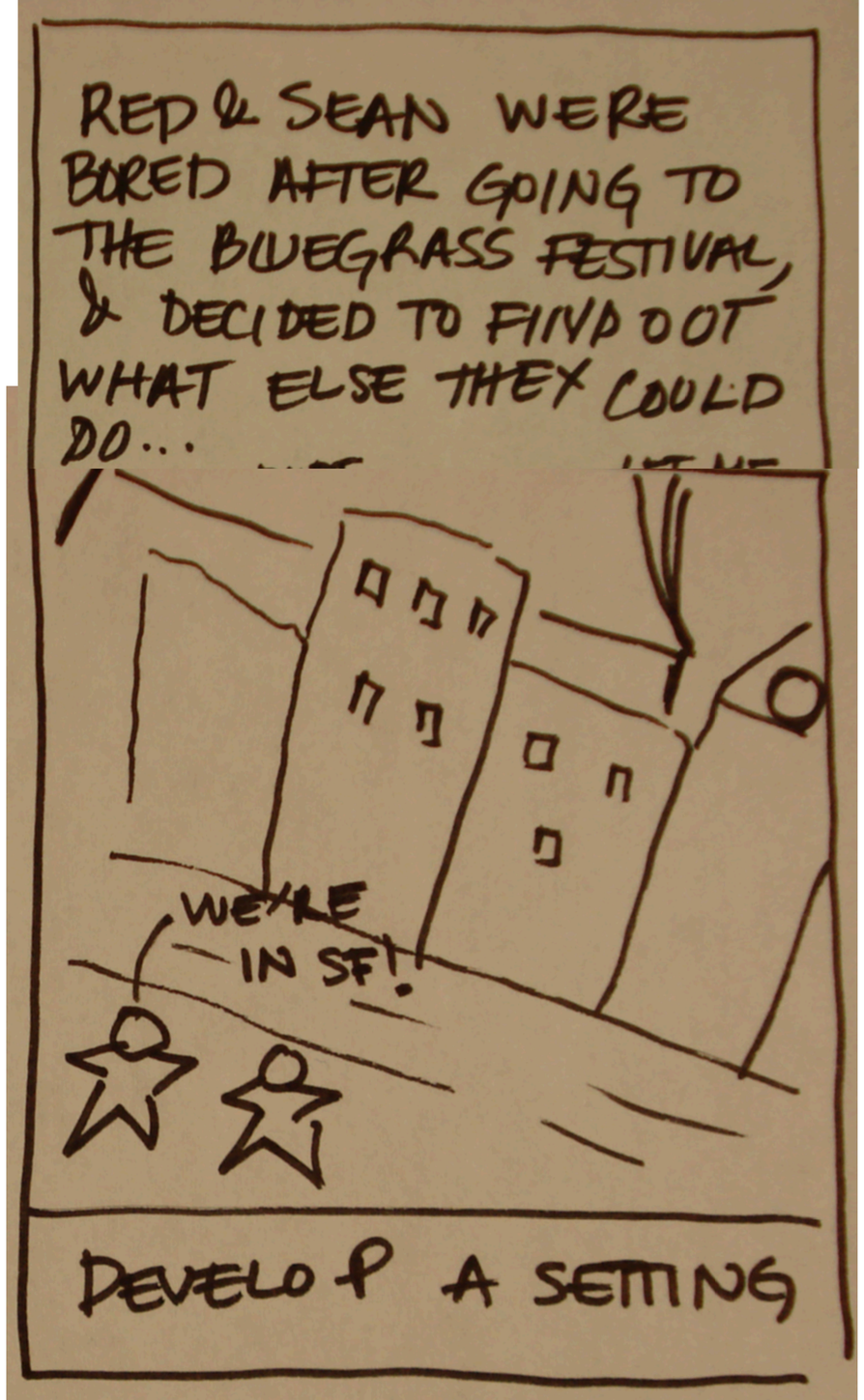
Setting

Who are the people involved?

What is the environment they're in?

What is the task they're trying to accomplish?



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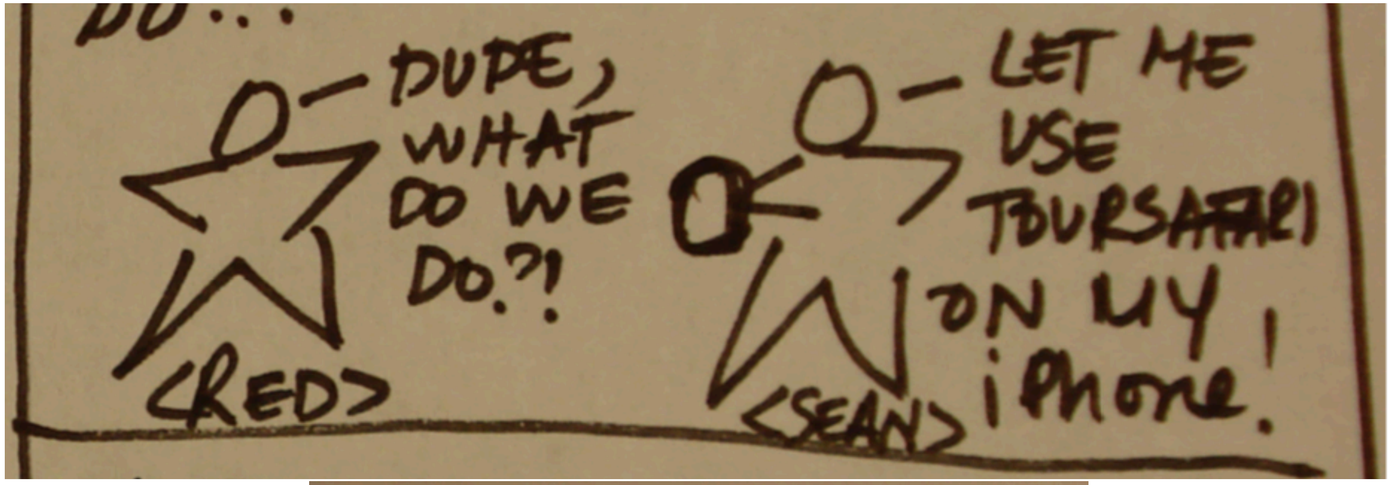
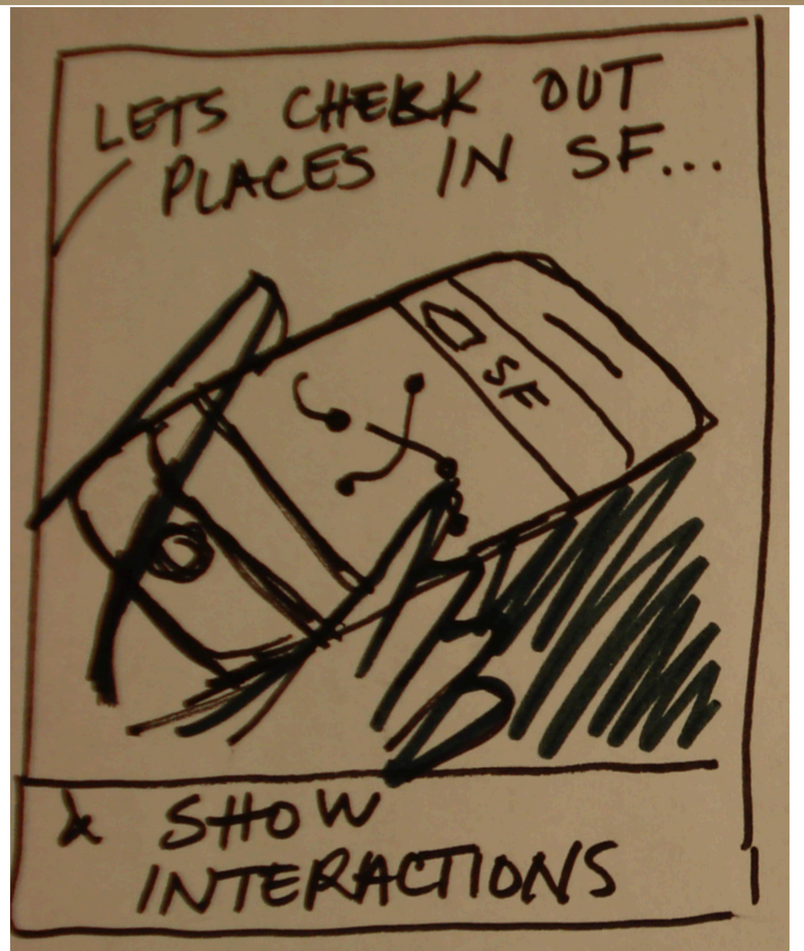
Sequence

What leads someone to use the app?

What steps are involved?

What task is being illustrated?





From Amal Dar Aziz, http://d.ucsd.edu/story/

Satisfaction

What's the end result?

What does it enable people to do?

How does it tie back to people's motivation/setting?

What need are you satisfying?

From Amal Dar Aziz, http://d.ucsd.edu/story/

Storyboards

=

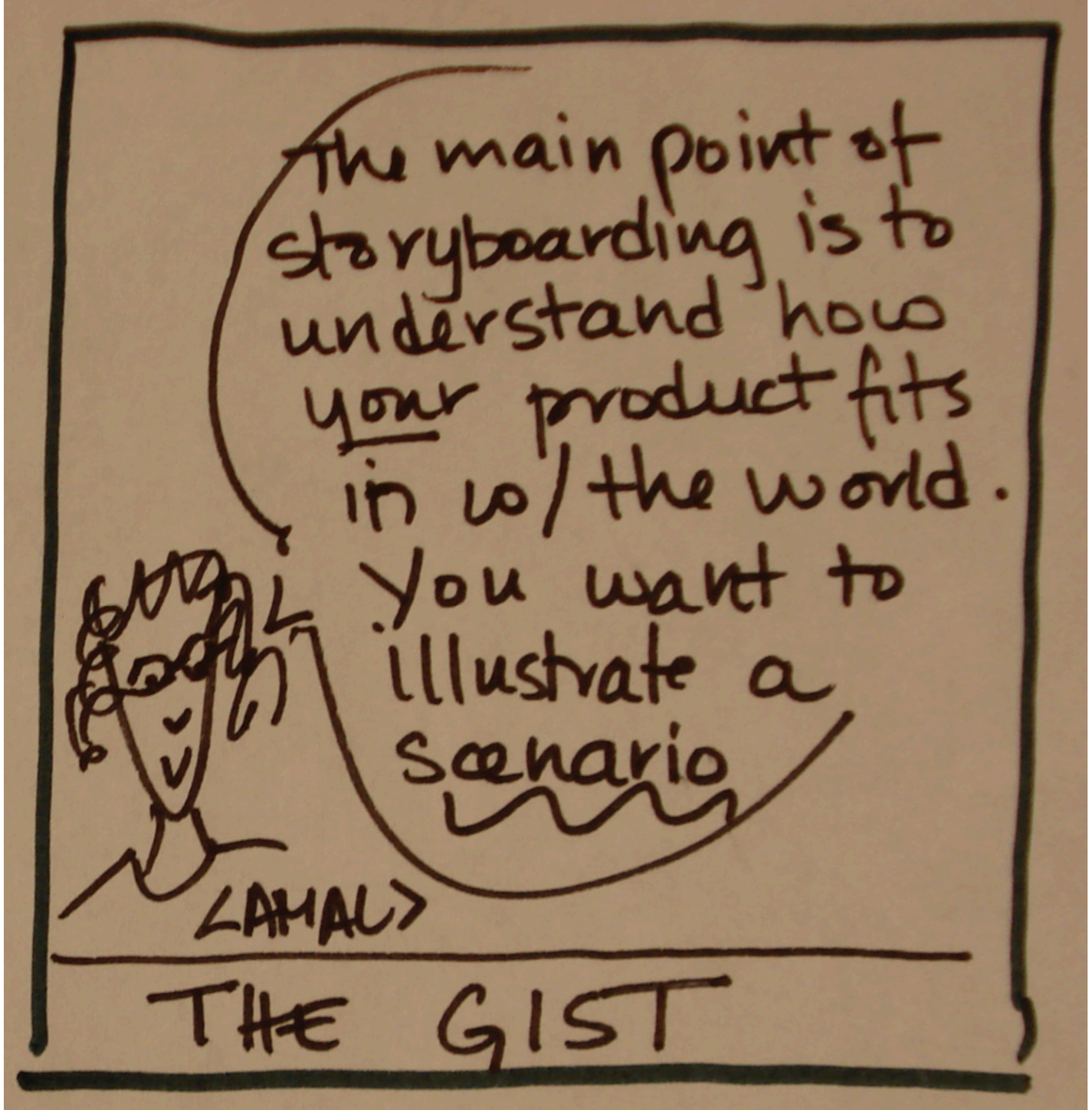
Setting

+

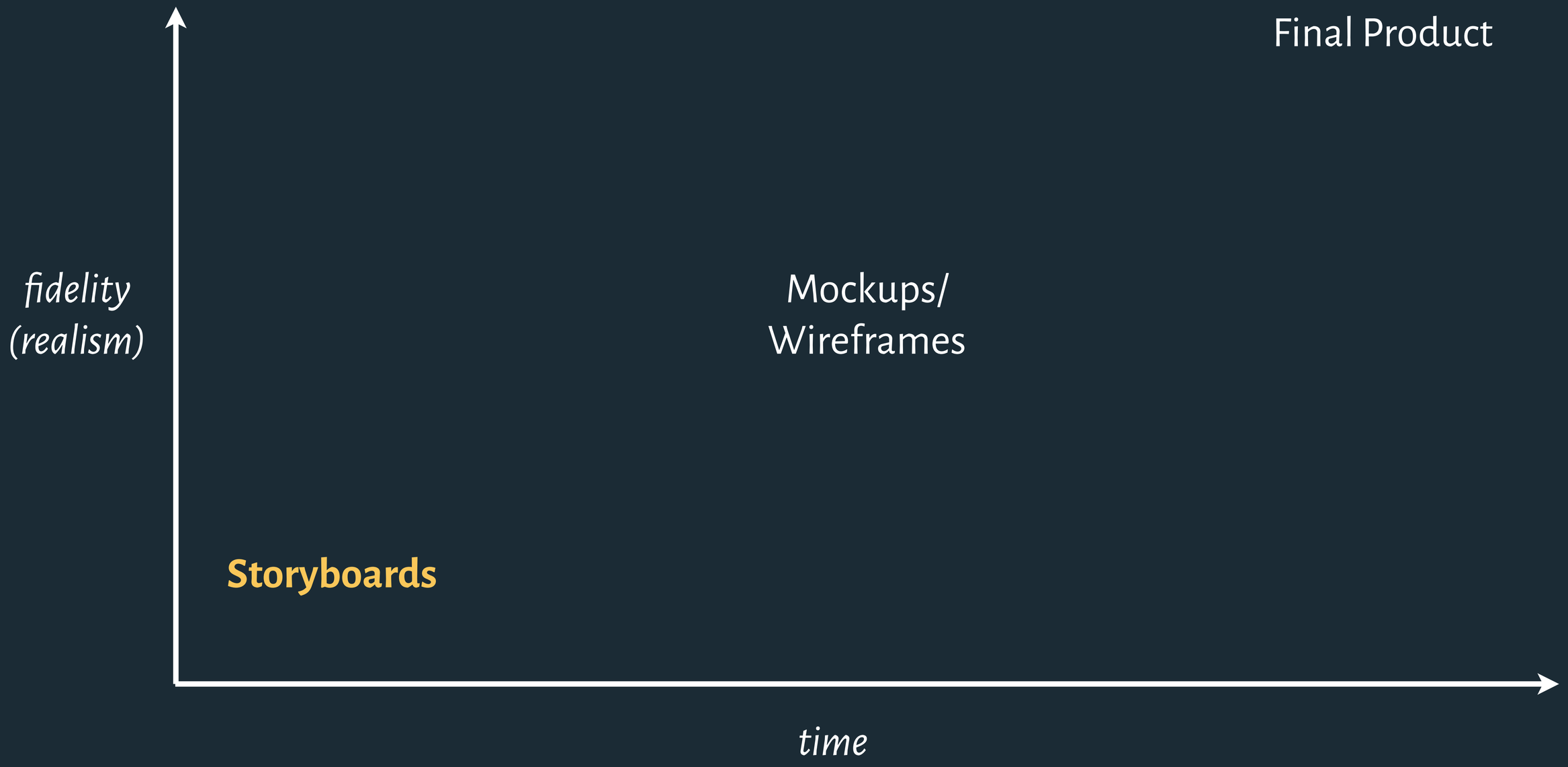
Sequence

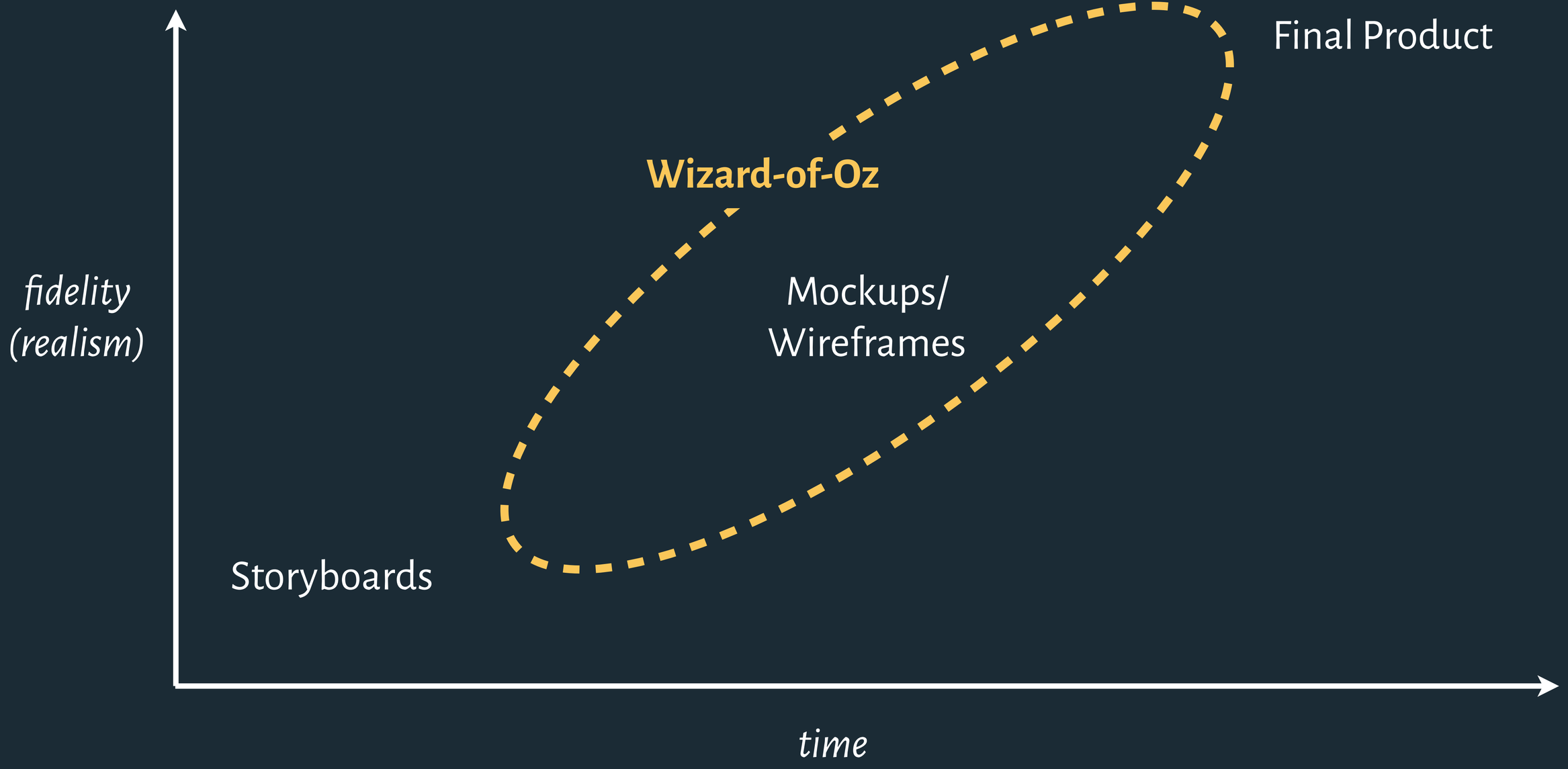
+

Satisfaction



From Amal Dar Aziz, http://d.ucsd.edu/story/


Final Product
fidelity
(realism)
Mockups/
Wireframes
Storyboards
time


Final Product
Wizard-of-Oz
Mockups/
Wireframes
Storyboards
fidelity
(realism)
time

Wizard of Oz Technique

Make an interactive application without (much) code:

- Front end interface (hard to fake this part).
- (Remote) wizard controls the user interface.
- Must take less time/money than building the real thing.

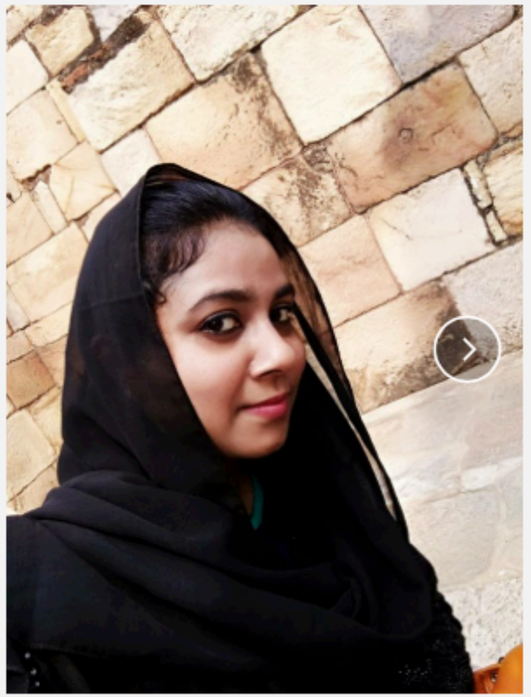
Get feedback from real people

- Hi-fidelity: users think it's real, their behavior matters.
- Low-fidelity: users have license to suggest changes.

AI's dirty little secret: It's powered by people

By RYAN NAKASHIMA March 5, 2018

SAN FRANCISCO (AP) — There's a dirty little secret about artificial intelligence: It's powered by hundreds of thousands of real people.



From makeup artists in Venezuela to women in conservative parts of India, people around the world are doing the digital equivalent of needlework —drawing boxes around cars in street photos, tagging images, and transcribing snatches of speech that computers can't quite make out.

Such data feeds directly into "machine learning" algorithms that help self-driving cars wind through traffic and let Alexa figure out that you want the lights on. Many such technologies wouldn't work without massive quantities of this human-labeled data.

These repetitive tasks pay pennies apiece. But in bulk, this work can offer a decent wage in many parts of the world — even in the U.S. This burgeoning but largely unseen cottage

Wizard of Oz Technique

Map out scenarios and application flow

What should happen in response to user behavior?

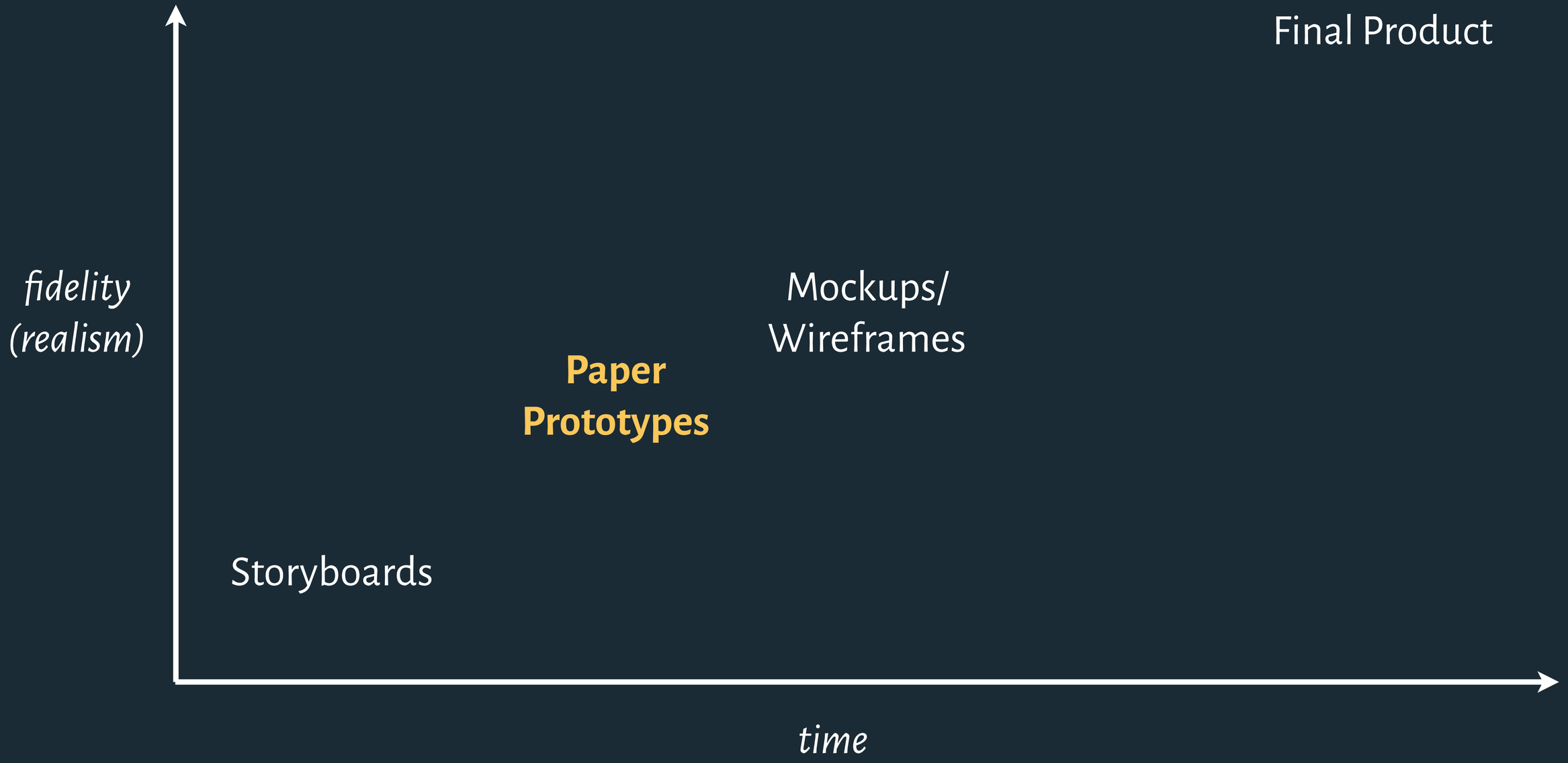
Put together interface "skeletons"

Develop "hooks" for wizard input

Where and how the wizard will provide input (e.g., selecting the next screen, entering text, entering a zone, recognizing speech, etc.)

Must be possible to replace later with computer

Rehearse wizard role with a colleague.


Final Product
fidelity (realism)
Mockups/ Wireframes
Paper Prototypes
Storyboards
time


LIFE Saver
American
Red Cross

Prototyping Tips

1. Make it **concrete**.
2. Make **small investments**.
3. Get desired **feedback**.
4. **Iterate**, iterate, iterate.
5. Share **multiple** prototypes.

Functional Fixation

Parallel Prototyping Leads to Better Results

Serial Iteration

Parallel Iteration

[Dow et al. TOCHI2010]