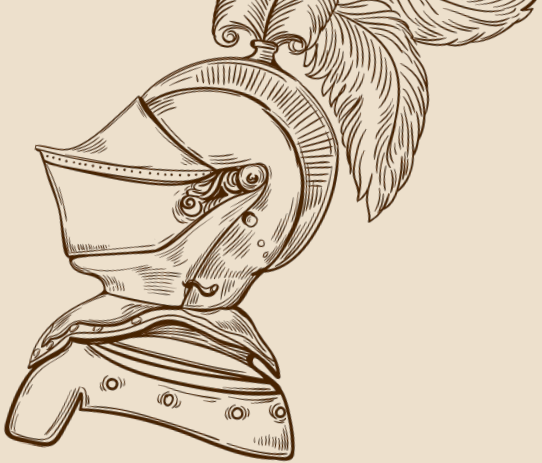
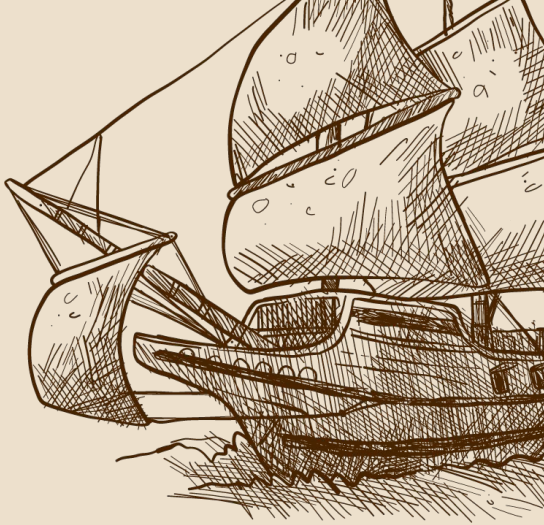
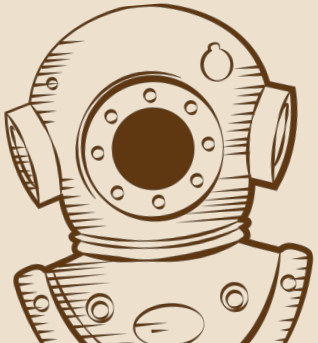




ARCH

Where will you Quest?



Stanford Team ARCH (CS 210 ‘22)
Shana Hadi, Jonathan Kula, Lina Fang, Jiahui Chen

Meet the Team

We created project ARCH for Stanford CS 210 ‘22,
in collaboration with Meta’s Global Historical Archive

Shana Hadi

Designer & Developer
MS CS (HCI) ‘23
BS CS, BA English ‘21

Jonathan Kula

Designer & Developer
MS CS (HCI) ‘23
BS CS (Systems) ‘21

Lina Fang

Designer & Developer
MS MS&E (AI) ‘22
BS ME ‘19

Jiahui Chen

Developer
BS CS ‘24

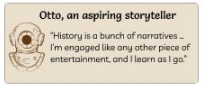
ARCH

Stanford Team ARCH: Shana Hadi, Jonathan Kula, Lina Fang, Jiahui Chen

For CS210 2022, in collaboration with Meta's Global Historical Archive

Design Process

1. Needfinding & Ideation



Brainstorming board with 90+ ideas across 4 team members, on story, presence, history, ethics, and retention

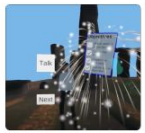
2. Paper & Puzzle Prototypes

A wacky puzzle-driven interactive fiction, featuring a parasocial relationship with a giant snail, to test branching and integrated puzzles

A brief detective interactive narrative, featuring a missing pendant, a thief, and a murder of crows, to test puzzles, narrative, and VR-like spatial play

3. Twine & Unity Prototypes

Twine story architecture featuring an archaeology student's journey through unravelling a professor-led conspiracy at Stonehenge



Unity VR experience featuring a secret society recruit tasked with special objectives, using mechanics like a brush to help conserve Stonehenge

Our Product

A "thin slice" Unity VR experience at Stonehenge, where you are an archaeologist-in-training assisting your eccentric professor, who insists that the artifacts have stories

Meta Global Historical Archive

Explore: the world around you, the soundscape, and the stones

Engage with: narrative snippets and "delight" features

Search for: historical artifacts and their sprite-voiced backstories

Game Loop

Premise	Objectives	Discovery	Stories	Closing
"Onboarding" with your archaeology professor: receive your tools and learn about their relationship with Stonehenge	Explore 3 locations and search for several artifacts on your professor's behalf (and for your thesis)	With each artifact, "unlock" special narrative segments that strengthen your mentorship, and your thesis proposal	Through the artifacts, learn about the significance of antler picks, bone shards, and ancient Roman pottery	Celebrate your discoveries with your trove of memories, and if you found all the artifacts, receive a special sprite visit!

Key User Insights

Design for Delight

Players will more positively engage if they have opportunities for self-motivated or surprising discoveries.

Have a Reactive World

People connect more with a world that is alive, particularly a world that encourages interaction and investigation of the setting.

Ground Narratives in Purpose

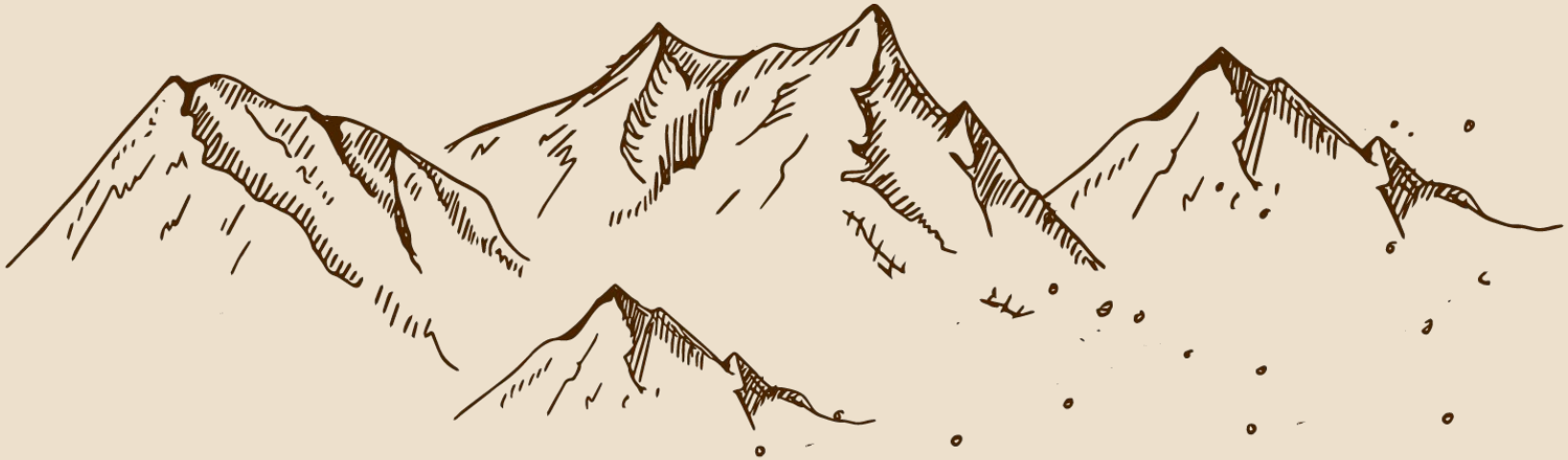
When players enter a VR experience, they explore from the "I" perspective: content they can relate to is key.
Players will feel immersed and can get excited by archaeology "grunt work" (even filing receipts) when they feel like there is an overarching purpose.

Impact

Education
VR for increasing cultural engagement and learning

Storytelling
VR for immersive empathy-building and narrative

Exploration
VR as a medium for stay-at-home travel to historic locations



01 "Thin Slice" Final Prototype

02 Synthesized User Insights

03 Reflection on Our Design Process

04 The Archives (all the slides!)

“Thin Slice” Final Prototype

We won first place at the 2022 Stanford Senior Software Project Demo Day! :)

Final Deliverable: One Episode Arc(h)

Product: After 5+ rounds of prototype/test in <20 weeks, we created a **“thin slice”** proof-of-concept prototype that combines **storytelling**, **history**, and **VR affordances** at a world heritage site, Stonehenge.

Premise: An episodic narrative game with a mystery to solve…
You will play a “**Stonehenge** slice of life,” where you are an **archaeologist-in-training** crafting your thesis proposal with the help of your **eccentric advisor**, who insists **artifacts have stories**.

- **Explore:** the world around you, search the landscape for inspiration (artifacts), fun facts, and stories
- **Engage with:** narrative snippets, “delight” features
- **Search for:** historical artifacts and their backstories

Our Player Archetypes

The Time-Passer:
Someone who wants to immerse themselves in new locations

The Wanderer:
Someone who wants to travel, but can't for whatever reason

Real Customer Profile

The Story-Seeker:
Someone who approaches narrative as an opportunity to connect with the experiences of others

The Learner:
Someone who desires rich cultural experiences, beyond the classroom

We particularly target players interested in **education**, **storytelling**, and **exploration**. We consider VR an exciting, **emerging medium** for imparting long-lasting appreciation of and **respect for history and world heritage sites**.

Core Game Loop, drafts on Figma

Premise	Objectives	Discovery	Stories	Closing
"Onboarding" with your archaeology professor: receive your tools and learn about their relationship with Stonehenge	Explore 3 locations and search for several artifacts on your professor's behalf (and for your thesis)	With each artifact, "unlock" special narrative segments that strengthen your mentorship, and your thesis proposal	Through the artifacts, learn about the significance of antler picks, bone shards, and ancient Roman pottery	Celebrate your discoveries with your trove of memories, and if you found all the artifacts, receive a special sprite visit!

Key Design Goals, drafts on Figma

- **Storytelling "arc" for a cohesive game experience with a "hook"**
  - How: Our **5-part narrative structure** "game loop" for the immersion
  - How: Special **climax "reward"** that ingrains a "sense of purpose" re: **caretaking**
- **Emphasis on "delight" and intrinsic motivators, not must-dos**
  - How: **3 key artifacts** to (easily) **explore** and **find** within the area, which will "unlock" **personified historically-researched stories** about the artifact
  - How: **Reactive world**, like clouds, birds, sheep, and immersive sound
  - How: Open **space**, **VR visual effects** (particles!), **tactile tools** (rock, glass)
- **Historical and narrative immersion in the site's inherent mysteries**
  - How: Professor / thesis **archaeology premise** and **characterization** because we are **targeting student players,** and we want to investigate **history education** in VR
  - How: More integrated **site-specific exploration**, pop-up **stories** on actual historical artifacts discovered at the site in prior excavations
  - How: 3 artifacts all chosen to **reflect an essential theme of the site's prehistory**
    - Pottery (**art**), human bone (**social**, funerary rites), antler tool (**tech**)

Video Demo
(~11 mins)

Recorded on the Oculus Quest 2

Also available on YouTube here

Synthesized User Insights

Our original user insights are available on slides 70-76.

MDA: A Formal Approach to Game Design (Hunicke, LeBlanc, Zubek)

We include this reference to strengthen our discussion of our user insights, especially using the paper's 8 defined types of fun.

The MDA framework formalizes the consumption of games by breaking them into their distinct components:

Rules → **System** → **"Fun"**

…and establishing their design counterparts:

Mechanics → **Dynamics** → **Aesthetics**

Mechanics describes the particular components of the game, at the level of data representation and algorithms.

Dynamics describes the run-time behavior of the mechanics acting on player inputs and each others' outputs over time.

Aesthetics describes the desirable emotional responses evoked in the player, when she interacts with the game system.

The production and consumption of game artifacts.

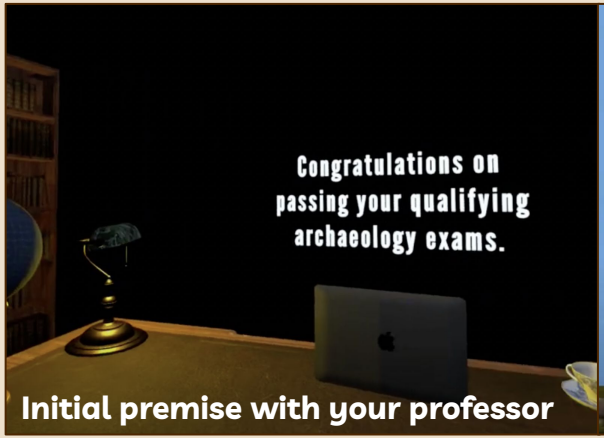
In describing the aesthetics of a game, we want to move away from words like "fun" and "gameplay" towards a more directed vocabulary. This includes but is not limited to the taxonomy listed here:

1. **Sensation**
   Game as sense-pleasure
2. **Fantasy**
   Game as make-believe
3. **Narrative**
   Game as drama
4. **Challenge**
   Game as obstacle course
5. **Fellowship**
   Game as social framework
6. **Discovery**
   Game as uncharted territory
7. **Expression**
   Game as self-discovery
8. **Submission**
   Game as pastime

1.

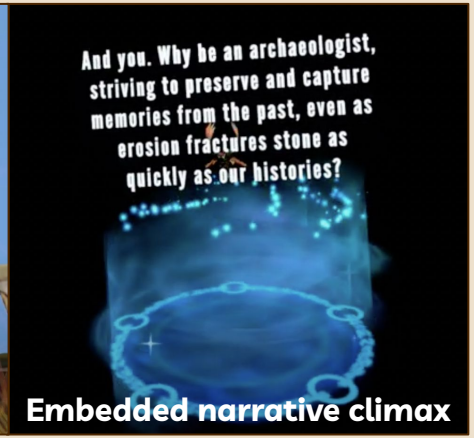
Narratives provide useful game structure & integrate well with historical themes. Grounding them in purpose increases players' immersion.

Impact: HIGH /// Confidence: HIGH



Initial premise with your professor

Particle effects at Stonehenge



Embedded narrative climax

1. Narratives provide useful game structure & integrate well with historical themes. Grounding them in purpose increases players' immersion.

VR headsets can be physically estranging, but **narratives offer a familiar structure** to aid **immersion** and "forget about the headset." We found that because players explored in VR from an "I" perspective, **a story they could relate to was key**. The **more grounded** the story (in realism), the **more connected** they felt to the site → this would result in "**flow**." (Fun type: narrative)

"I really like how grounded that was. It felt more connected to Stonehenge."

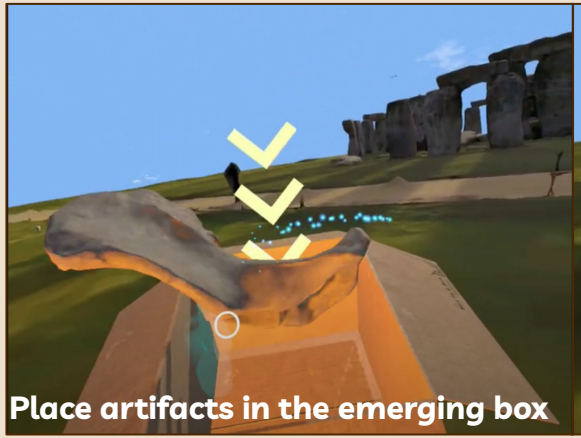
"The conspiracy angle was fun and flashier, but the thesis idea ... gives you more agency ... the opportunity of more roads not traveled, replay potential."

- <u>How:</u> We wanted to investigate narrative + puzzles + VR → education, and all our prototypes had a storyline. However, **the most successful storyline naturally emerged from Stonehenge's inherent mysteries** (thus, archaeology theming), rather than an external plot.
- The "**eccentric professor**" **characterization** and established relationship during onboarding led to **greater "suspension of disbelief,"** and also **affirmed the player's social presence.**
- Players were most excited by objectives with an **overarching sense of purpose** connected to their own progress (e.g., find these artifacts for *your* thesis, for *your* professor), which **made "grunt work" feel worthwhile**, especially during the climax when a spirit thanks them. :)
- <u>Our hypothesis:</u> Storytelling-based games have already been shown to increase retention / recall and make learning more meaningful (Naul, Liu 2019), and since VR can provide experiential "learning by doing," **merging narrative, characters, and VR can lead to higher presence and long-lasting impact**, especially within shorter experiences (Bailenson).

2.

Designing for delight with “optional” discoveries enriches the overall experience and intrinsically motivates players to stay longer.

Impact: HIGH /// Confidence: HIGH


Place artifacts in the emerging box

Find fun facts with the glass


Search for sheep to pet

2. Designing for delight with "optional" discoveries enriches the overall experience and intrinsically motivates players to stay longer.

Discovery – especially **self-motivated** discovery – should be **rewarded**. This includes **unexpected**, **"chance" encounters** that are **part of a longer journey with a clearer objective.** (Fun types: narrative, sensation, discovery)

"I unlocked it! What does it do? Did it do anything?"

"The mystery really pulls me along."

"The sheep are clearly the best part."

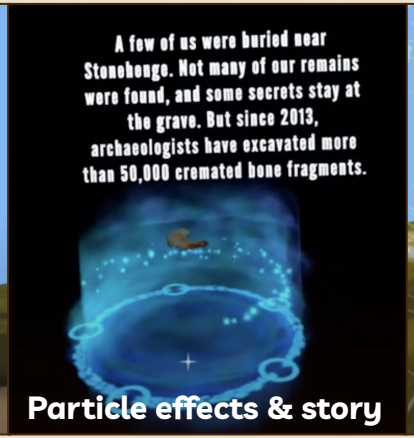
- How: In the context of our story-based game (narrative), **the "main" objective was finding artifacts and their stories**, but we also enriched the central narrative experience with **optional features** for players who enter the experience with **varying motivations**, such as those interested in "**game-breaking**" (e.g., you can teleport to the top of the highest stone), **wandering** (ambient sounds and clouds), **self-guided learning** (magnifying glass fun facts), **embedded historical stories** (artifact narrative backstories), and **whimsy** (sheep petting).
  - Several players reported that because it was "**optional**," they felt they had more **self-agency** in deciding to take a detour, which enriched their experience and their "immersive state of flow," even as they still eventually completed the main goal.
- Our hypothesis: **Players enter the game with their own expectations**, and by fostering a continued sense of possibility **via smaller feedback loops** of "discovery → reward" linked to their prior interests, players are sustained by their curiosity and are further **immersed by the environmental details**. Their successful discoveries also build their feeling of **self-efficacy** when they discover something "on their own," which **reinforces the positive feedback loop**.

3.

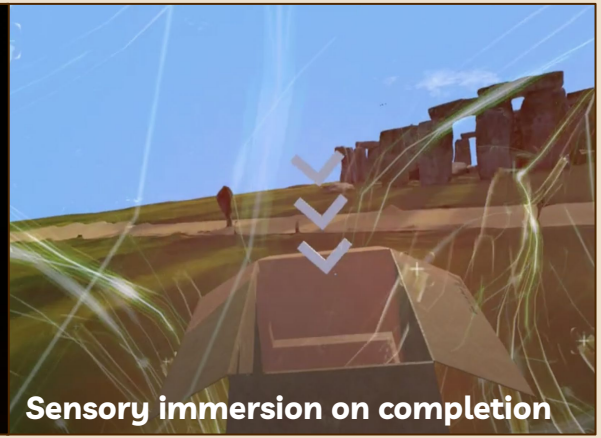
Having a reactive world that leans into VR-only affordances (“themed” and “tactile”) affirms players’ presence and expectations.

Impact: HIGH /// Confidence: HIGH

Throwing the “spirit rock” compass



Particle effects & story



Sensory immersion on completion

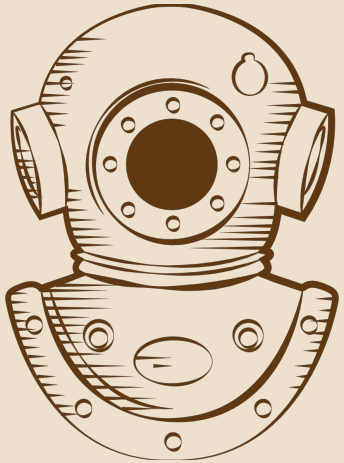
3. Having a reactive world that leans into VR-only affordances ("themed" and "tactile") affirms players' presence and expectations.

People connect best with **a world that is alive**, especially one that encourages self-motivated **interaction** ("What could happen if I ….?"). Players reported having **stronger physical presence with more reactive, tactile elements** (such as throwables), and were more engaged when they found **whimsical "slice of life" delights only available in VR**. (Fun types: sensation, discovery)

"I just love the sound when I find something! It's so pleasing!"

"How do I get to the top of the rocks? What happens? Oh! Can I throw this rock?"

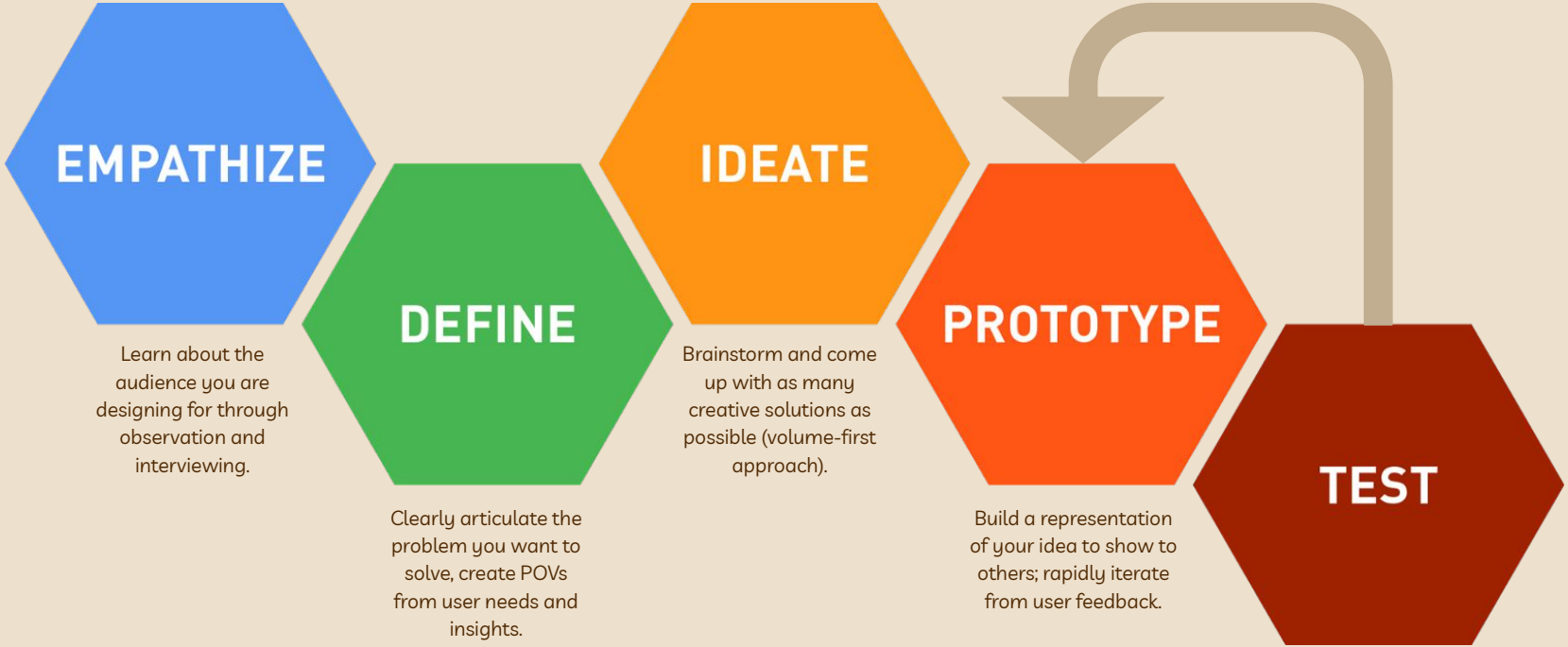
- How: For our "thin slice" we leaned into **VR-only affordances**, such as immersive **aesthetic grandness** from **particle effects**, **ambient sound**, and **tappable button menus**.
  - One such **whimsical addition**, **sheep petting**, frequently led to **expressions of joy**.
  - In a future iteration, we would like to add path pebbles that you can jostle, rain and hail that hampers movement, and *always, always* more particle and sound effects.
- **Interactive elements** were most effective (i.e., did not feel misplaced) when it was narrative-"**themed**" and "**tactile**," such as searching for an artifact with a **throwable rock compass** that would help guide your path (which is only available, and safe to do, in VR!).
- Our hypothesis: Adding onto insight #2, people are happy to **spend a long time trying** to do something **they want to do**, **especially when it seems "hidden**" and needs to be pieced together (e.g., the professor foreshadowing the rock compass). **Internal consistency with the VR-only features and realism** (the rock will glow when you are near an artifact, but still needs to be thrown according to the laws of physics) further increases players' buy-in.

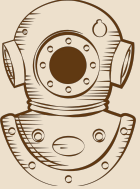


Reflection on Our Design Process

Stanford d.school Design Thinking Framework

We include this reference to strengthen our discussion of our prototyping strategy, and how VR leads to unique challenges regarding prototyping and testing our core hypotheses.

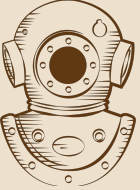




Challenge: VR is an emerging space, and we may need a new prototyping strategy

VR is still an emerging technology with quickly changing hardware, so there are **no well-established design patterns or prototyping systems** for creating these immersive experiences. We went through **many iterations** across a variety of low-fi, med-fi, and high-fi prototypes (d.school methodology), and tested out a **variety of rapid prototyping strategies**.

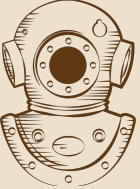
- Our central challenge: it is **difficult to recreate VR affordances in real life to test our assumptions via low-fi prototypes**, and yet at the same time, also **difficult to implement a VR-ready technical product**. Traditionally, a high-fidelity prototype is implemented *only* after we have validated core hypotheses from lower-stakes "constant iteration" prototypes.
  - Even after overcoming the technical barrier, **we still might not elicit the necessary types of feedback with a technical high-fi prototype**. In our winter Unity VR prototype, >40% of our players' feedback focused on the render quality of the Stonehenge graphics, not our more essential tactile interactions or archaeology-themed mechanics.
- What worked: In spring, we carried out a **"flare and focus" parallel prototyping process** to test out the 1) narrative framework and theming (in Twine) along with the 2) tactile and sensory VR affordances (in Unity) to **ensure we were receiving useful feedback on all parts** of our game.
  - We also used the **Wizard of Oz method** to test out potential "what-if" mechanics while players were wearing the hardware and immersed in a VR environment, even if we had not yet technically implemented the features, to more closely mimic the sensory experience.



VR rapid prototyping design patterns to streamline development

A "flare and focus" parallel prototyping process with merged insights between tests **works best for a multifaceted VR game**, but we also discovered some **design patterns to speed-up creating the VR high-fidelity prototypes** to more easily allow for **rapid adjustments**.

- Make gratuitous use of events, **which supports chaining more complex behavior**.
  - When events for some **basic interactions** are not exposed to the Unity editor, **make basic scripts that expose that functionality** – such as our **collision trigger** component (which triggered an event when a collider intersected with it) – we **reused it across features**, such as for the magnifying glass used to discover fun facts, and for many of our easter eggs.
  - Also strive to make **these interactions quickly modifiable and testable from the editor**, to reduce the need to build the game to the headset and manually run it with each change.
- Follow OOP paradigms when modelling behavior with shared similarities, and use base/abstract classes where useful; e.g., our various collectables were simple extensions of an abstract base class.
- Add shortcuts to skip time-consuming segments, such as for **extended dialogue or features barred behind lengthy interactions** (or require completed objectives), like the narrative climax.
  - These shortcuts can be removed later, but will assist in quick developer "experience" tests.
- Also make gratuitous use of low-fi models from Sketchfab / Asset Store, as not only will it **reduce lag** during development, **low-res approximation is better** for theming and "feel" in user testing **than using basic shapes**, and links to the traditional model of **low-fi prototyping a "sketchier" product** to indicate work-in-progress and **elicit user feedback less focused on the polish**.
  - The flashier the particle effect, the better – esp as smaller details would be noticed less.

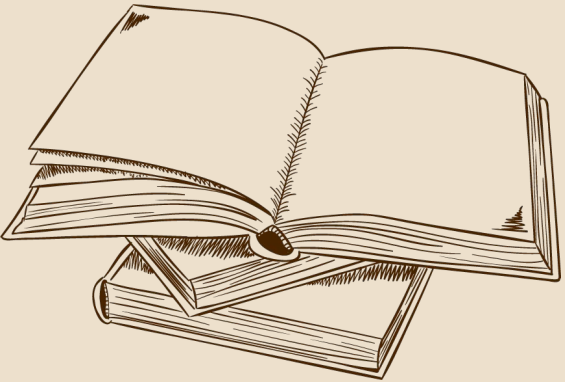


Next Steps

In future iterations, we would investigate **new ways to rapid prototype at lower fidelity** for **faster iteration** on a **larger variety of disparate ideas**. We include two below:

- **"Real life" history spatial prototype:** conducting a respectful "live-action roleplay" game via the Wizard of Oz method at a large historical space, potentially with a vehicle to mimic teleportation.
  - This would be most useful for **uncovering players' natural interactions** when playing a game with their physical bodies (grabbing is easy, writing is harder) and **their response to being within a sacred space**, and **prioritizing the most necessary features** to translate over to VR for an immersive experience.
- **Bricolage VR spatial prototype:** "live-action roleplay" as above, but while utilizing existing social VR platforms such as Engage and VRSpace to create virtual, designer-controllable spaces.
  - This would be most useful for **iterating over different types of games** (e.g., a scavenger hunt) **with VR affordances** (e.g., particle effects), where the space can be reused or quickly modified, and the main changes are in the game master's script and allowed actions.

Overall, **we expanded our knowledge of rapid prototyping for VR and in VR**, and along the way we learned more about Unity VR technical development, narrative development, and game design, and nurtured a **growing love and appreciation for history and world heritage sites**! Perhaps one day we will all visit Stonehenge and experience it in "real life" – and then again in "virtual life," while wearing headsets! :)



The Archives

The Archives, List of Contents

1. **Needfinding and User Research** (late January), slides 26-30
2. **Ideation** (early February), slides 31-38
3. **Paper Prototypes and Test** (late February), slides 39-48
4. **Revised Functional Prototype and Test** (March), slides 49-59
5. **Parallel Paper & Unity "Flare" and "Focus" Prototypes and Test** (April), slides 60-70
6. **Aggregate User Insights from Parallel Paper & Unity Prototypes and Test** (late April), slides 71-77
7. **Customer Profile Interviews** (early May), slides 78-82
8. **"Thin Slice" Unity VR Prototype and Test** (May), slides 83-89

1.

Needfinding and User Research (late January)

Our Participants

Educators

- Stanford GSE professor
- K-12 teacher-in-training
- Current CAs and TAs

K-12 Students

- High school senior applying to colleges
- High school freshman

Game (& Tech) Enthusiasts

- Minecraft aficionado
- Assassin's Creed fan
- VR users and researchers

(Game) Designers & Storytellers

- Digital & Board game designer
- Dungeons & Dragons DM
- Interactive storytellers

All 9 participants were interviewed over Zoom for 45-60 minutes.

Guiding Questions

Games

Can you walk me through the process of selecting a game to play? What values, themes, or mechanics do you prioritize, and why?

What's a game that you come back to over and over again? What about that game draws you back?

History

When I say "history," what do you think of? What experiences?

What is one memorable experience of when you feel like you really learned more about history, or a historical site? What particular elements helped you learn more?

Digital Resources

How do you "travel" or "explore history" while at home (e.g., during the pandemic)? Are there digital resources that you use to help with this, and if so, what are they?

How have games worked for you?

Selected Point of Views (POVs)

Peter

We met Peter, a Computer Vision PhD student from Germany, enthusiastic about games, VR apps, and traveling
We were surprised to realize
Peter strongly preferred games where they can identify themselves with the character they are playing
We wondered if this means
Peter may still want to be their true self even in the virtual world
It would be game-changing if
we could create in-world opportunities to reflect their personal values, goals, emotions, and inner conflicts

"I find games most engaging when I feel connected to the characters I'm playing and see myself reflected in them."

Ophelia

We met Ophelia, a teacher-in-training invested in visual novels and narratives
We were surprised to realize
Ophelia selects games with multiple endings that require hard work and deductive reasoning for the "true end"
We wondered if this means
Ophelia enjoys roleplaying as the characters and making decisions to discover and drive the plot forward
It would be game-changing if
we could motivate players to learn history through decision-making in interactive narratives

"I love character-driven plots [in games]... where you have to work for the true ending ... because I want to try to be one step ahead."

Otto

We met Otto, a storyteller, YouTube devotee, and RA at the Stanford VHIL (studying psychological effects of VR),
We were surprised to realize
Otto primarily learned about history through videos and audiobooks, and they prioritized the presenter and presentation over the historical content
We wondered if this means
Otto highly values the storyteller's craft and persona (e.g., quirks) more than the details of the story itself
It would be game-changing if
we could integrate personable storytellers into learning about history.

"History is a bunch of narratives ... I'm engaged like any other piece of entertainment, and I learn as I go."

Synthesized Insights

Characters & Narrative

Connecting with characters (and story) on a personal level

"Having mental health challenges presented so impactfully and relatably in a video game was so personally important." -Lynn

"I like games with rich environmental details... where every little thing relates to the larger story and world.." -Jessica

Player Autonomy

Making decisions and having control over the gameplay and outcome

"Open-world games help me be more creative, and do what I want to do ... I like having options." -Kaya

"[Choose your own adventure] is a form of pedagogy. [Roleplay games are] learning experiences that ask people to step into others' shoes. To make a decision." -Lyco

Immersion & Exploration

Familiarity with the world, and ability to explore new places

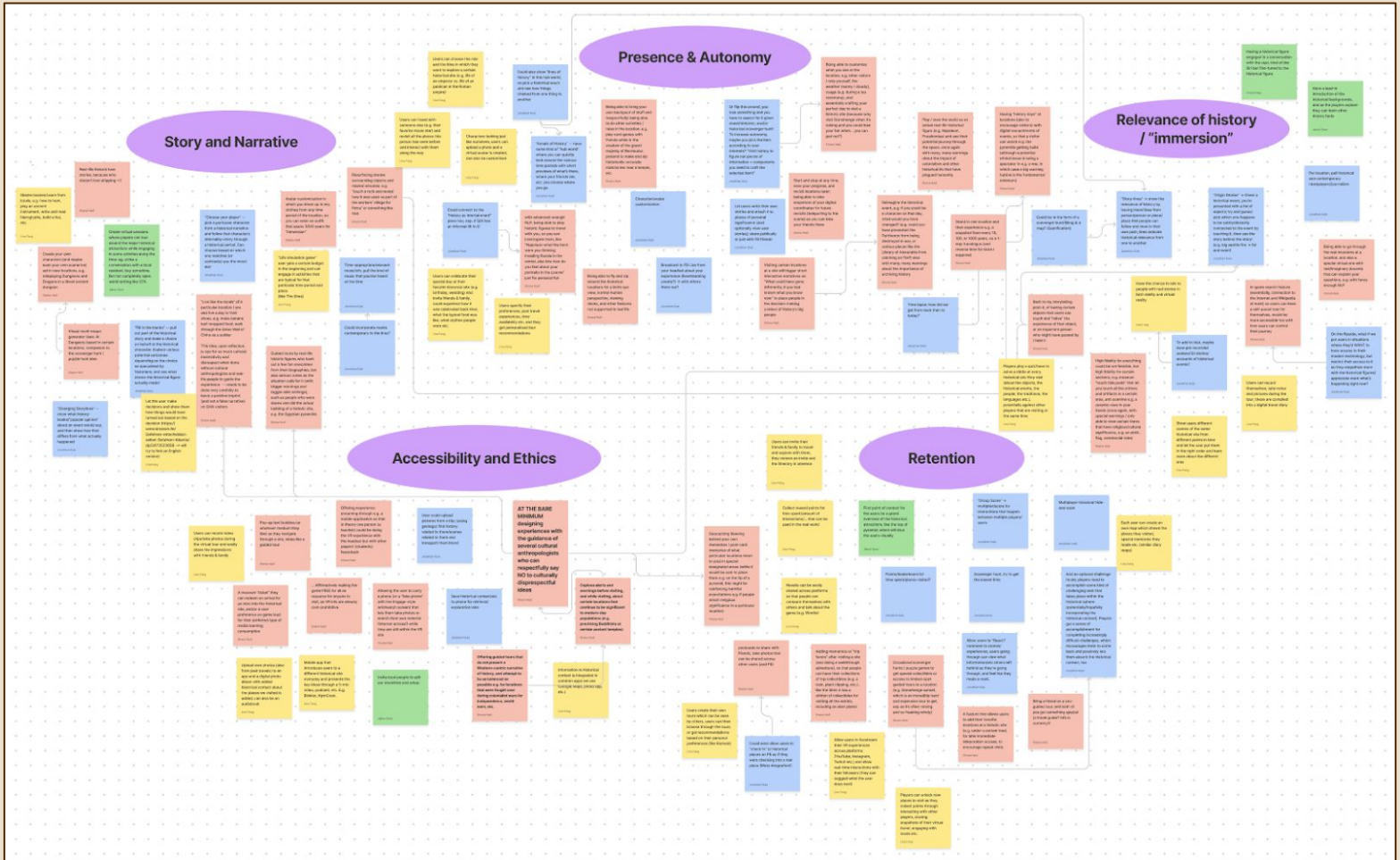
"I love this game so much because I have played it more than 1000 times now. Yet I still feel that I have only scratched the surface and there's so much for me to learn." -Randy

"I love games where I can have a familiar experience, with just a little change; something to keep me coming back." -Otto

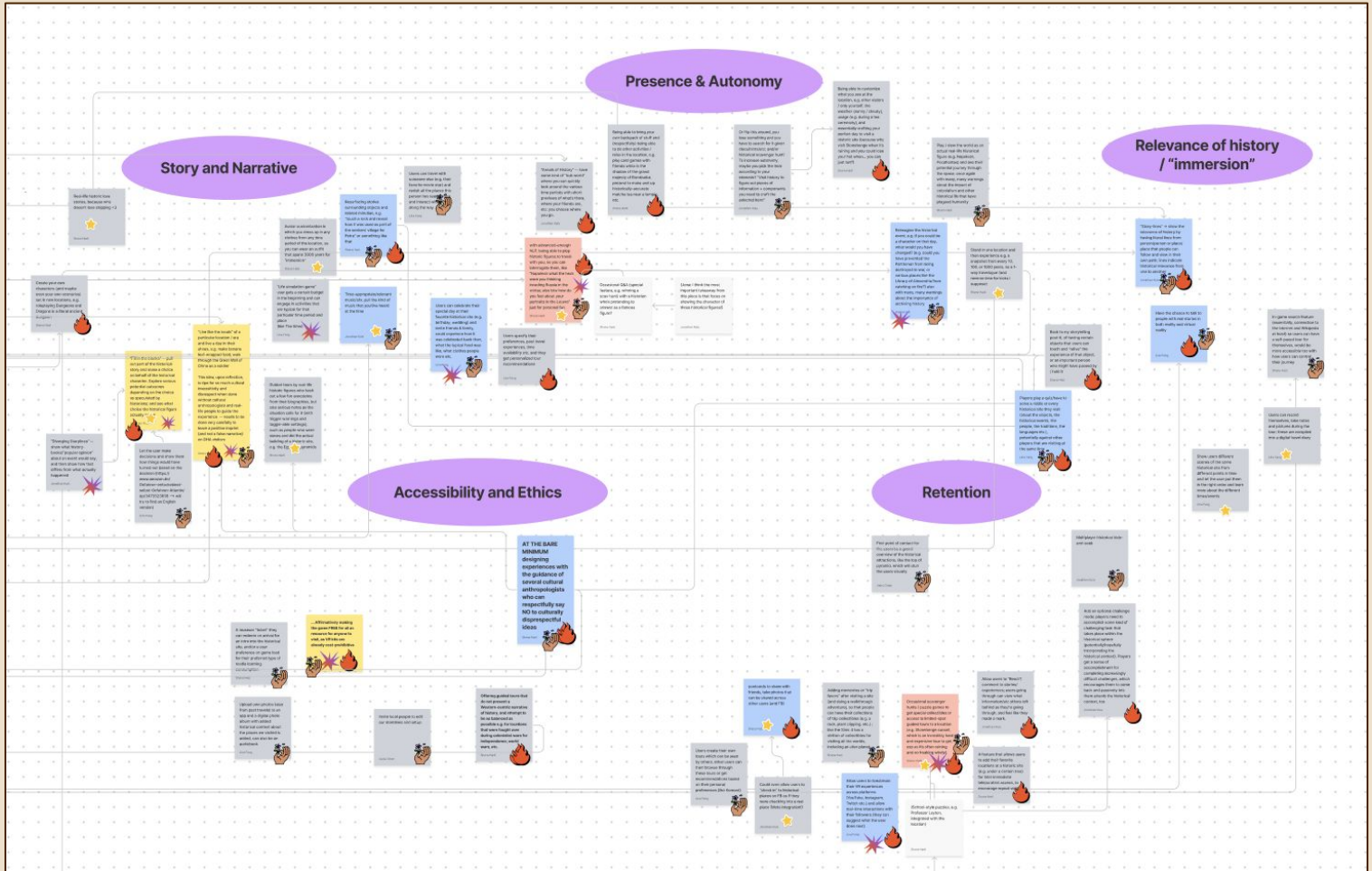
2.

Ideation (early February)

Brainstorming Board, on Figma



Curation


Presence & Autonomy
Story and Narrative
Relevance of history / "immersion"
Accessibility and Ethics
Retention
AT THE BARE MINIMUM designing experiences with the guidance of several cultural anthropologists who can respectfully say NO to culturally disrespectful ideas

Proposed Mechanics

01
Choose Your Own Adventure Stories

Explore how historical stories unfold via interactive narratives, 1 decision at a time

02
Mixed Reality Experiences

Bring your modern-day life events (e.g. birthdays, weddings) into richly created historical sites

03
Puzzle Adventures & Mementos

Play site-specific skill-based games as part of a scavenger hunt, and earn collectibles to take back into your real world

1. Choose Your Own Adventure (CYOA)

Historical Immersion and Player Decision-Making Agency and Discovery

"Diverging Storylines" -- show what history-books/"popular opinion" about an event would say, and then show how that differs from what actually happened

"Fill in the blanks" -- pull out part of the historical story and make a choice on behalf of the historical character. Explore various potential outcomes depending on the choice as speculated by historians; and see what choice the historical figure actually made!

Let the user make decisions and show them how things would have turned out based on the decision (https://www.amazon.de/Gefahren-entscheidest-selbst-Gefahren-Atlantis/dp/3473523[illegible] try to find an [illegible] version)

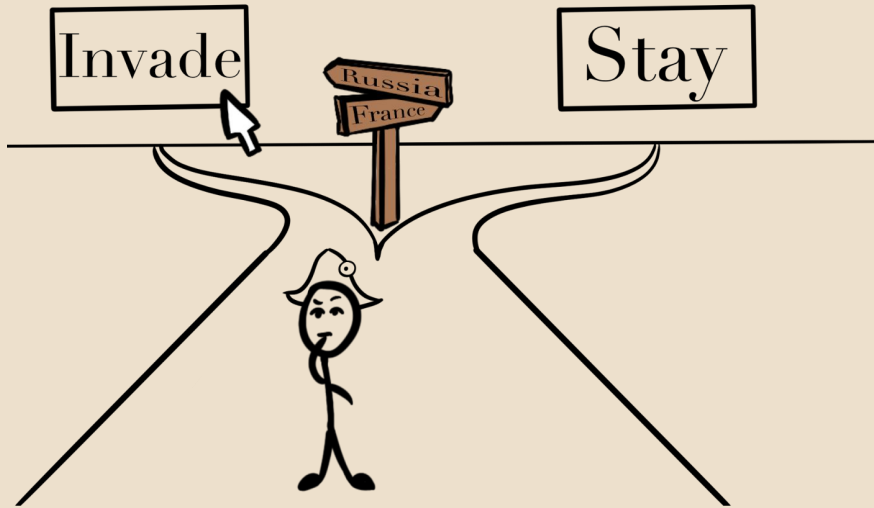
"Live like the locals" of a particular location / era and live a day in their shoes, e.g. make banana leaf-wrapped food, walk through the Great Wall of China as a soldier

This idea, upon reflection, is ripe for so much cultural insensitivity and disrespect when done without cultural anthropologists and real-life people to guide the experience -- needs to be done very carefully to leave a positive imprint (and not a false narrative) on GHA visitors

Library of Alexandria from catching on fire?) also with many, many warnings about the importance of archiving history

people with real stories in both reality and virtual reality

What do you do next?



2. Mixed Reality Experiences

Celebrate Life Events in Virtual Locations

Users can celebrate their special day at their favorite historical site (e.g. birthday, wedding) and invite friends & family, could experiece how it was celebrated back then, what the typical food was like, what clothes people wore etc.

with advanced-enough NLP, being able to plop historic figures to travel with you, so you can interrogate them, like "Napoleon what the heck were you thinking invading Russia in the winter, also btw how do you feel about your portraits in the Louvre" just for personal fun

Users specify their preferences, past travel experiences, time availability etc. and they get personalized tour recommendations

3. Puzzle Adventures & Mementos

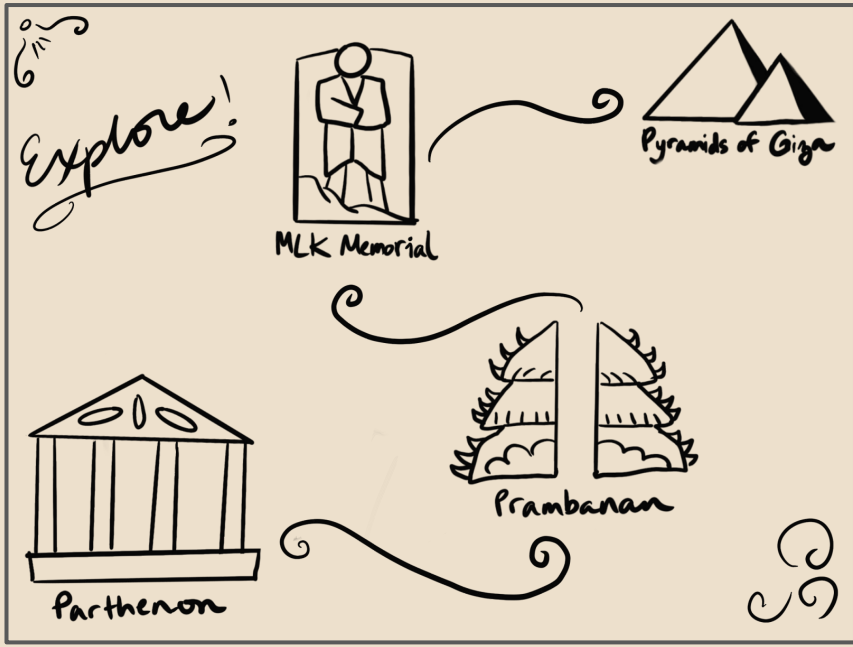
Educational Exploration and Recollection

Occasional scavenger hunts / puzzle games to get special collectibles or access to limited-spot guided tours to a location (e.g. Stonehenge sunset, which is an incredibly hard and expensive tour to get, esp as it's often raining and so freaking windy)

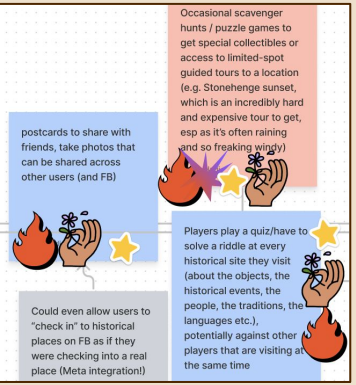
postcards to share with friends, take photos that can be shared across other users (and FB)

Players play a quiz/have to solve a riddle at every historical site they visit (about the objects, the historical events, the people, the traditions, the languages etc.), potentially against other players that are visiting at the same time

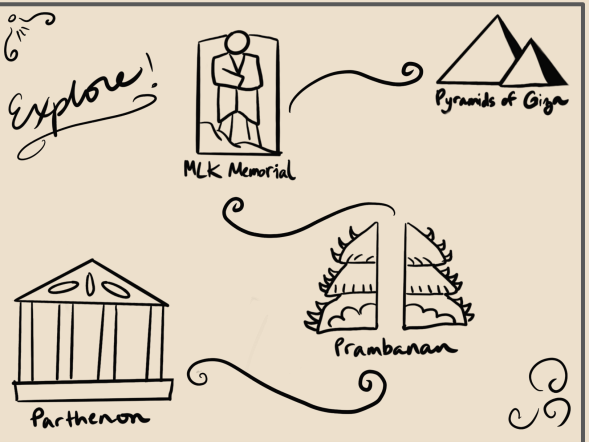
Could even allow users to "check in" to historical places on FB as if they were checking into a real place (Meta integration!)



Proposal: Puzzle Adventure (+ Some Story)



A sprawling scavenger hunt (inspired by detective fiction) where players have to solve site-specific puzzles at each location to find clues for the next location + solve a mystery



- Serialized (with collectibles)
- Collect-a-thon (with unlockables)
- With contained or overarching narratives
- Inspiration: Pokémon Go, Poptropica, Ace Attorney, Mario Odyssey

3.

Paper Prototypes and Test (late February)

2 Prototypes, 3 Core Mechanics

01
Serialized “String of Pearls”

20-minute “short story” narrative + puzzle experiences that encourage players to return for the next “episode”

02
Branching Narrative

Players actively decide how the narrative branches and moves forward, with multiple “earnable” endings

03
Embedded Puzzle Adventures

Players solve themed puzzles/challenges within the story to find the next location and collect clues (and items) to solve the mystery

#1 "Lost Pendant"

A brief detective VN in three acts

ACT ONE: INTRODUCTION

INT. DORM ROOM - DAY
The sun is in the sky as the afternoon starts to become late. The PLAYER finds themself in their dorm room, having completed classes for the day, and ready to take a relaxing day off.

PLAYER's phone starts ringing. It's a close friend of theirs.

(The PLAYER answers the phone)

FRIEND
Hey, sorry for calling out of nowhere! I just- I've been tearing my room apart looking for my pendant, and I can't find it anywhere. Y'know, that gold one I always wear- I, God, I have no idea how I lost it!

PLAYER is presented with two dialogue options:

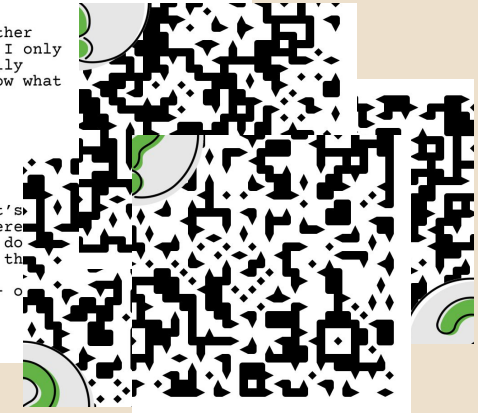
PLAYER
(option one)
The pendant?

FRIEND
(friendly, joking)
Oh, come on, PLAYER! What other heart-shaped, gold pendant? I only wear it every day- it's really important to me, I don't know what I'll do if I lost it...

PLAYER
(option two)
Where could it be?

FRIEND
I haven't left campus, so it's GOTTA be around here somewhere right? I've been here at my do in the park nearby EVGR, to th engineering quad and comm department for classes, and- o

PLAYER
Oh?



- **Premise:** Your friend lost their pendant: can you help them find the thief and recover it? (How do you collect clues, investigate your surroundings, and interrogate likely suspects?)
- **Spoiler:** the potential suspect seems to know too much… but then, so do the crows…

- **Key elements:**
- Detective-style "solve the mystery"
- Quest to help your friend and clear the suspect's name →intrinsic motivation
- Puzzles that "unlock" next story scene
- Spatial play emulates VR environment

#2 "Surreal Sand Snail"

A wacky puzzle-driven interactive fiction

Set the scene:

You are on Stanford campus, and Galentine's -- and Valentine's -- day is coming up soon. You don't currently have a gift for your loved one -- they have so many interests, it's hard to choose one! -- and you figured you might as well brainstorm while wandering campus.

You're a little sleep-deprived -- thank god they drove the car this morning -- but you want to collect some new plant clippings for your collection, now that it's spring. Your loved one always says you're prone to "seeing things," but all you see is the love that abounds in the world.

The trees have violet leaves, streaked with large orange caterpillars, and the human-sized squirrels are collecting fruit and nut donations from the passerby. A few classes are conducting lessons in open-air on the grass, students laughing, perhaps mildly heat-stroked from the sun. Bubbles rise from the grass like multicolored pearls.

You spend a few more minutes taking in the sights, breathing in the air that smells faintly of tomato soup and clementine.

Wait... where did your loved one go?

Scene 1:

You take out your phone. It's dead. Whoops. You do have a terrible habit of forgetting to charge your phone before bed.

Well, time to call for help. Oh
giant one too. It's pink? Gold-
streak of glitter on its side?

Campus is more overgrown th
only happened every quarter c
and don't move, they usually g

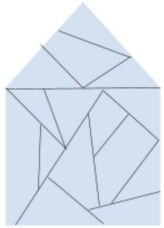
Oh fuck. It's coming closer to
are long enough to wrap arou

- Decision: Run to Gre

Library:

- You see the VR equip
one's livelihoods, wo
machine that powers

Puzzle 2: Fit items back in the box (paper cut-outs)



Puzzle 3: Solve a cipher (only a few words to unlock a message)

S n a i l = v q d l o

Zkhq vqdlov qhhg wr frppxqlfdwh zlwk hdfk rwkhu, wkhb xvh vkhoo skrqhv dqg vqdlo pdlo.

- **Premise:** You're a Stanford plant-enthusiast searching for your loved one, when you meet a giant snail... do you collect red kelp from its shell, or run? (Will you be eaten, or become friends?)
- **Spoiler:** befriending the snail unlocks their name and backstory! (Are you up for the challenge?)
- "When snails want to communicate, they use shell phones and snail mail"
- **Key elements**
- Story progression "string of pearls" and branching narrative: 3 puzzles → 3 scenes
  - **Do players run or approach?
- Investment in learning more about the character (and story) to "unlock" more lore
- Gauging interest in "unique" textual details

Our Playtests

Context

- ~30 min short experiences with 10 unique people
- Facilitator, notetaker
- In-person and over Zoom

Participants

- College Students
  - Stanford and external
- K-12 Students
- 8 total playtests

Procedure

- Role-play experiences, audio / visually recorded
- Participants asked to narrate thoughts aloud
- Post-game debrief questions per participant

Metrics

- Engagement with the narrative and mechanics
- Successes (e.g., puzzle-solving speed, decision-making rationale)
- Failures (e.g., confusion points)
- Post-game survey (e.g., how did you feel about X character)

More on Our Metrics

Key questions to test our three game mechanics:

- Are players having fun? (MDA)
  - Narrative, Challenge, Discovery, etc.
- How did players perceive the puzzles?
  - Part of the story? A chore? A challenge?

- How often did players smile? Laugh? Lean in? At what points?
- Were they ever confused? Frustrated? Why?
- How quickly did they solve a puzzle?
- Did they: start looking at their phones?
  - Lose track of the story during puzzles?
  - Need extra hints? More story details?

The production and consumption of game artifacts.

"MDA" by Robin Hunicke, Marc LeBlanc, Robert Zubek

In describing the aesthetics of a game, we want to move away from words like "fun" and "gameplay" towards a more directed vocabulary. This includes but is not limited to the taxonomy listed here:

1. **Sensation**
   Game as sense-pleasure
2. **Fantasy**
   Game as make-believe
3. **Narrative**
   Game as drama
4. **Challenge**
   Game as obstacle course
5. **Fellowship**
   Game as social framework
6. **Discovery**
   Game as uncharted territory
7. **Expression**
   Game as self-discovery
8. **Submission**
   Game as pastime

Synthesized Insights

"Hook" them in early

Rich character + environment **details** motivate players to make story decisions, solve puzzles, and be **invested** in the ending

"Add more to the lore to help incentivize exploration"

"I enjoyed how intertwined the storyline and the puzzles were"

Puzzles & stories with payoff

Balanced puzzles with just enough complexity (and VR-controllable), with **satisfying choices** that actually matter

"The decisions should have tradeoffs, so players would make consequential choices that impact them, or the other characters"

"I love the 'AHA' moment after solving a challenging problem"

Emergent dynamics & collaboration

Players will **invent** new ways to collaborate with others or **reshape the game**, especially if the affordance is not built-in

Players speculated on NPC motivations and added new dialogue: "Can we say..."

Mostly collaborative, with some competition (re: puzzle-solving) that drove social interaction

Lost Pendant: 4 Players in 48 Minutes

“Success”

0:11 min: emotional concern for fictional character Timothy
“Can we say our friend is having an issue with their phone?”

0:29 min: Players **set aside competition** to **collaborate** (7 min) on finding QR codes and the next location → **worked closer afterward**

0:47 min: Choosing the branching **path** that **supported Timothy**’s environmental science interests, and **unlocked** the pendant’s **backstory** (lore)

0 m — 12 m — 24 m — 36 m — 48 m

“Failure”

0:04 min: “confusion” about prime suspect NPC, accused fellow players instead
“I bet [other player] stole it.”

0:42 min: Continued interrogating NPC (5 min) + asked them to come along (not a built-in affordance → emergent mechanic)

Surreal Sand Snail: 1 Player in 32 Minutes

“Success”

0:04 min: Immediate appreciation of setting + sand snail despite obvious danger
“Y’know, I have a good feeling about this snail. I’m gonna approach it.”

0:23 min: Participant was **engrossed** in the cipher puzzle, **focused,** and felt rewarded upon completion. Found hints as a mechanic useful!

0:32 min: Felt a **parasocial bond** with the sand snail, and was **thoroughly glad to have the relationship pay off in the end.**

0 m | 8 m | 16 m | 24 m | 32 m

“Failure”

0:16 min: Tessellation puzzle was left unsolved due to tedium
“It’s hard to tell where the pieces should go– I could make any piece work.”

0:20 min: Participant looked **a little lost** when **the snail spoke in** computer programming **code** as part of a Stanford Easter Egg and puzzle (not relatable)

What We Learned

Rich characters, plots, & environment details intrinsically motivate players to become **invested** in **new episodes** & "**earn**" the good **ending**

Playtest "gap" between **spatial prototypes** and **VR experience** (such as **puzzle affordances**, though **interactive story elements translated well**)

Next Steps

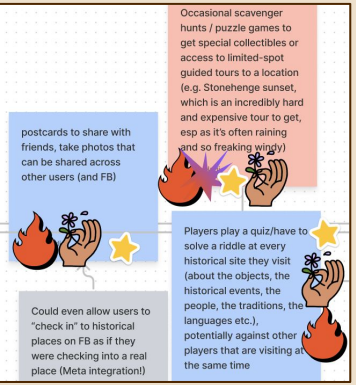
Create higher fidelity prototypes in Unity and other forms (such as paper, in-person adventures), and **build up engaging lore** for "Stanford" or a GHA location

Design puzzles explicitly for VR (such as less writing/typing), and **iterate and refine our playtesting framework** to better **test VR products**

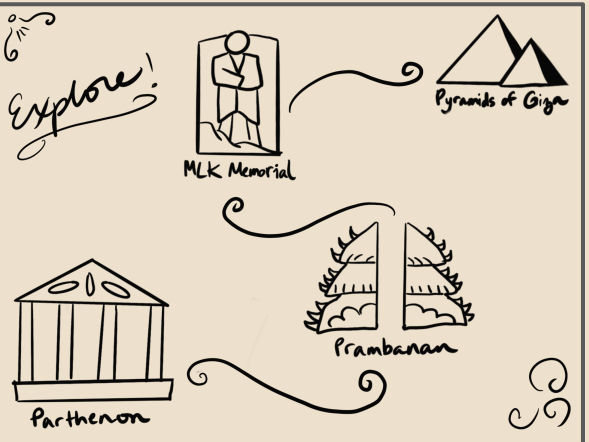
4.

Revised Functional Prototype and Test (March)

Updated Product: Serialized Puzzle Adventure Story



An episodic narrative with embedded puzzles (inspired by detective fiction + visual novels) where players solve site-specific puzzles to find clues for the next site + solve a mystery



- **Episodic**, ~30-minute experiences
- Embedded and overarching **narratives**
- **Puzzles** as tools to unlock locations + story
- **Collectibles** to save + share like postcards
- Inspiration: Poptropica, Ace Attorney, Pokémon Go, Mario Odyssey

Frame Narrative Arc(h)

A central **Arch**way to historical locations, where you aspire to become a secret order, sci-fi caretaker **Arch**ivist and **Arch**aeologist: AKA, an **Archon**

Your task:
Preserve history by restoring items to their original locations
Experience an unfolding mystery

Learning goals:
Understand location specificity (by what "doesn't belong"), appreciate and make connections across cultures and time

Why Arch:
Frame narrative supports episodic stories at myriad sites
Interconnects the user missions, sites, and alt universe "secret" mystery

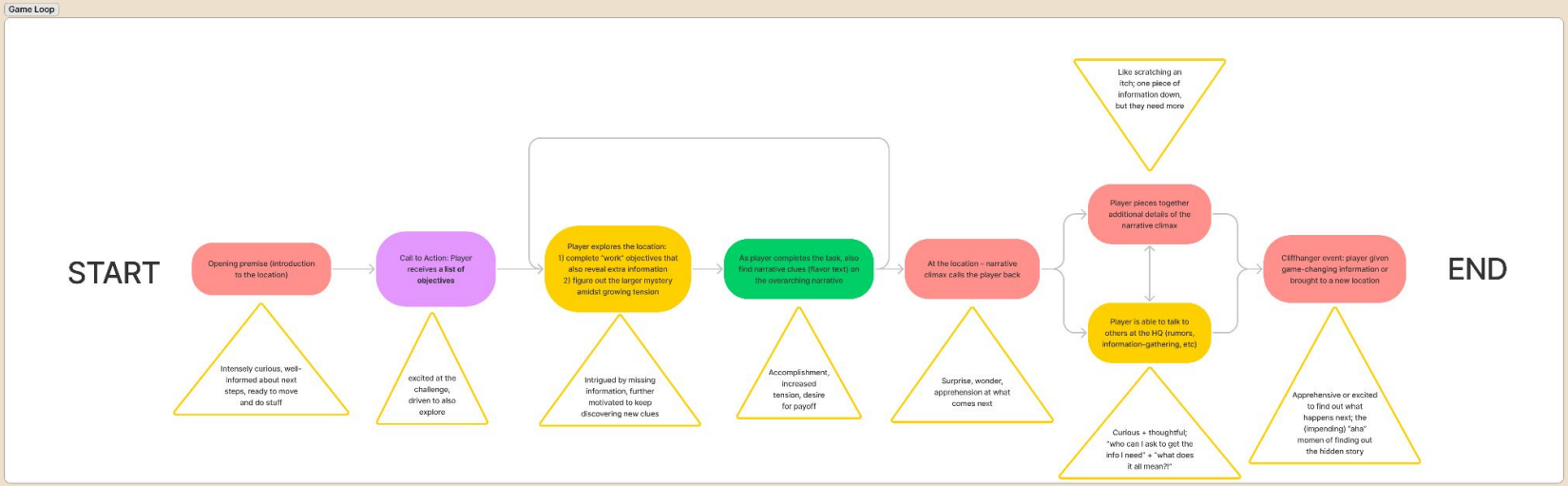
One Episode Arc(h)

A “Stonehenge slice of life,” where you are an **Archon-in-training**, assisting another Archon… only for your mentor to go missing

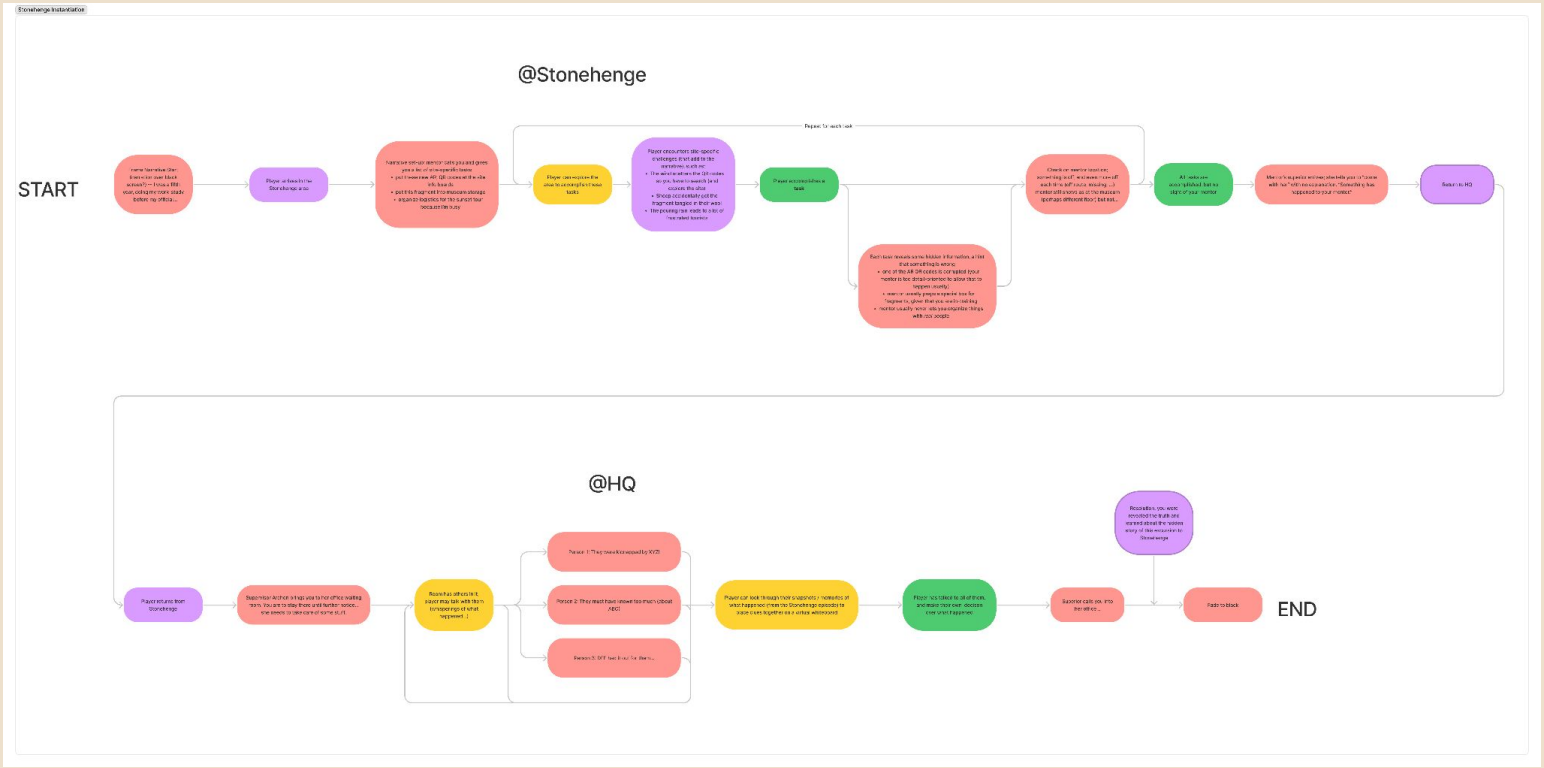
- **Search for:** artifacts out of place, your mentor’s organizational woes, and collectible “AR holograms”
- **Engage with:** confused tourists, puzzles, and sheep!
- **Explore:** the lovely terrain, educational boards, and the unfolding mystery

Overall Game Architecture (Loops and Arcs)

7 “pearls,” strung from start to finish
(link to Figma file)



Instantiation: Stonehenge, Episode 1 (link to Figma file)



Unity Quickstart Learning Milestones

Platforms

- Unity Hub, XR toolkit, and all the packages!
- Sketchfab and Unity store's free assets

Environment

- Customized terrain
- Lighting and shadows
- Audio and text clips

Unity Details

- Object physics and gravity
- Meshes, rigid bodies, colliders, and more!

Interactions

- Controller-based movement
- Teleportation and pointing
- Rotating puzzle

3 Unity VR Design Goals

01

Rich, semi-“physics-compliant” environment

encourage user exploration + engagement via detailed **affordances** rare/**unlikely in real life** (e.g., flying, sheep swarm, nice weather) for **physical + self presence**

02

Characters & entities with “real” user responses

increase user **immersion** within the **far-away locations** (and fictional frame narrative) via **realistic interactions with people** (NPCs) to get **social presence** (Lee, “Presence, Explicated”)

03

VR-specific puzzles that aid exploration & the story

as **physical controller limitations** → no pencil and paper puzzles, instead aim for grab/go, rotate, and 3-D movement to **take advantage** of the **VR medium**

Winter Demo Day Video

Winter Demo Day Insights

- **More user onboarding:** treat episode 1 as a low-stress way to introduce VR as a platform, alongside lore + plot
  - Demo testers needed quick intro to controllers
- **More user guidance:** state their allowed actions (and goals), teleportation bounds, map (& story) progression
- **User patience ~2 minutes:** users quickly gave up on the QR code puzzle after they got stuck (!= rotate pieces)
  - Need to test patience for story / mystery puzzles
- **We need more lo-fi tests:** When we asked for feedback, ~60% comments tied to prototype fidelity (good graphics, controllers) and not to the game concept itself

Overall End-Quarter Insights & Goals

- **Our product needs more tech + narrative content**
  - A few of us are new to Unity development, let alone VR, but it's a work in progress! :)
  - Our architecture relies on a frame narrative, which just needs more historical lore, character dev, etc.
- **Stepping back to do more lo-fi tests:** test validity of our game's core assumptions (serial narratives increase retention, users committed to sci-fi / historical whodunnit, etc.), outside of the high-fidelity VR platform
- **Thin-slicing:** focusing on an end-to-end experience at Stonehenge (lore, hi-fi user control/audio/graphics, pacing)

5.

Parallel Paper & Unity “Flare” and “Focus” Prototypes and Test (April)

Questions from Last Quarter

- **Product discovery or vertical slice?**
  - Decide: Should we focus on building multiple prototypes to test different elements of our core loop, or do we want to create an end-to-end vertical slice that covers the game loop?
  - Corollary: What, and how, should we user test?
- **More flare and focus, divide and conquer?**
  - Decide: How to balance team member existing skills with desired growth, maximize idea generation (product discovery) while directing enough effort into a cohesive final product
- **Retain the sci-fi / mystery premise?**
  - Decide: How might we balance purpose-granting, respectful “caretaking” with our initial premise of a secret order of Archons dedicated to archaeology and preservation?

What did we decide?

- **Hybrid discovery and implementation**
  - "**Flared**" product discovery for the first half of spring
    - 4 prototypes total, various fidelity
      - 2 "mini experiences" of game loop part 1
      - 2 "mini experiences" of game loop part 2
  - **Midterm** synthesis of results and create overall script
  - "**Focused**" implementation in the later half, all hands
    - 1 med-fi (wireframe) prototype of scenes and script
    - 1 high-fi (Unity) prototype of a cohesive experience
  - **Link to our WIP contract here**
- **Pivoting to a more grounded, self-contained archaeology premise that is set in the real world**

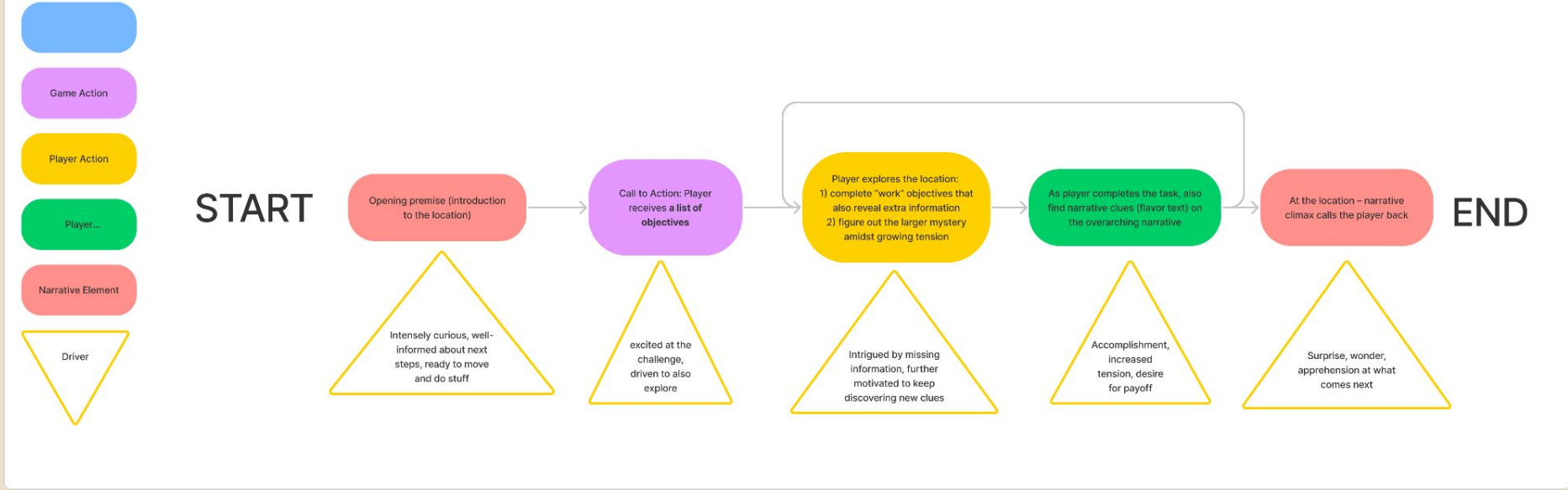
Spring Deliverable: One Episode Arc(h)

An episodic narrative game with a mystery to solve…
You will play a "**Stonehenge** slice of life," where you are an **archaeologist-in-training,** and your thesis **advisor disappears…**

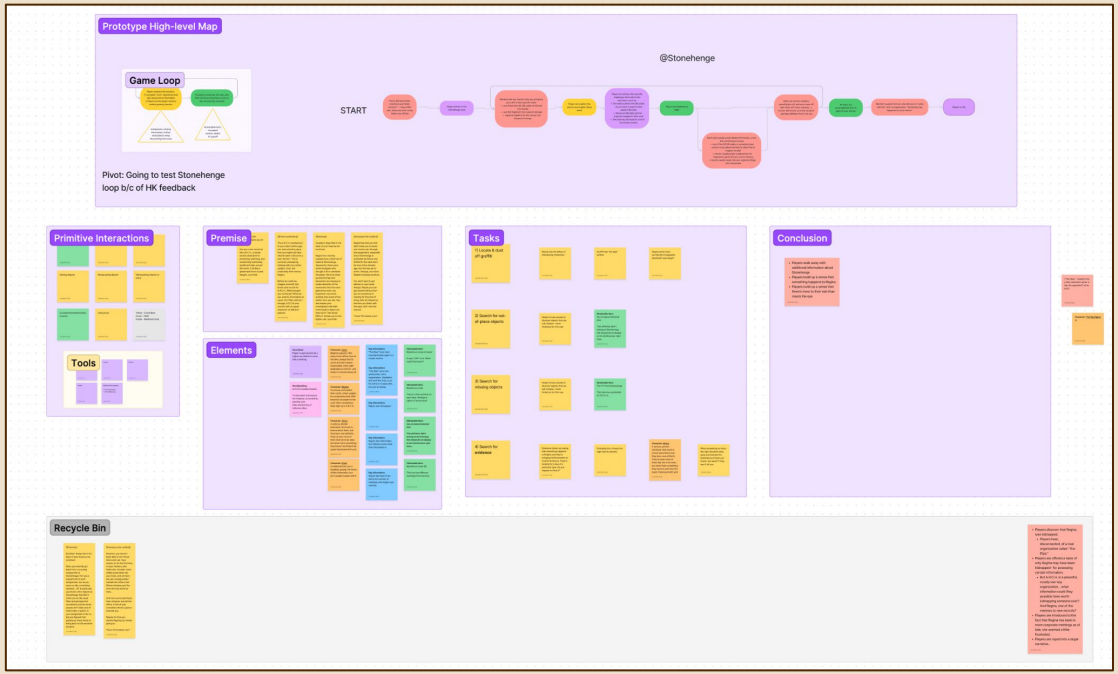
- **Search for:** artifacts out of place, clues to the mystery
- **Engage with:** narrative snippets, archaeology tasks
- **Explore:** the world around you, info boards, and the cohesive sound- and landscape

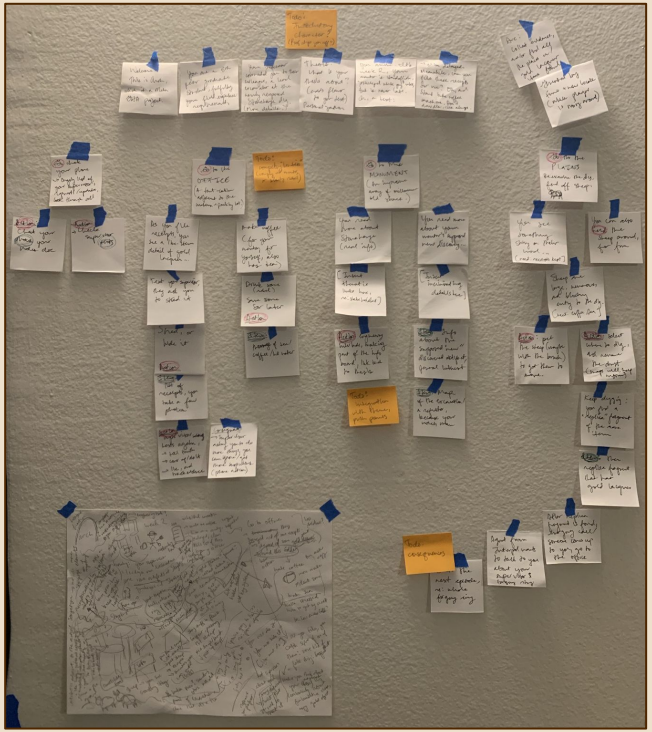
Updated Game Loop

Updated Game Loop



Flares


Prototype High-level Map
@Stonehenge
Game Loop
START
Pivot: Going to test Stonehenge loop b/c of HK feedback
Primitive Interactions
Tools
Premise
Elements
Tasks
Conclusion
Recycle Bin



Flares

Stonehenge

Opening Premise, Introduction to the location

Congrats! You have landed a position as assistant to the Head Archaeologist on the site of Stonehenge. Here they are reopening an investigation into the true purpose of the site. Part of your new job is to aid in collecting clues that either support or deny recent information that have come to light but not all is what it seems. Conspiracy Theorists believe we will finally fully understand what Stonehenge was actually used for in ancient times but the scientists aren't so sure.

To strengthen the theorists claim, recent documentation has surfaced in Ecuador concerning a very similar structure built there around the same time. For hundreds of years, it has been buried under the ground. Could these two structures be linked in some way? Will that link give us a clue into Stonehenge's real identity and purpose? You will have to explore to know for sure.

Head Archaeologist: "Hi there, I believe they sent you from the university to be my assistant. Nice to meet you, my name is Ferdinand, head archaeologist here. These conspiracy theorists think they can make up new stories everyday. We will just have to investigate to prove them wrong. Come along with me and we can get to work!"

Follow the Head Archaeologist to the site.

Call to Action: Player acquires a list of objectives

On the site, you meet a conspiracy theorist.

Theorist: "When the stars are aligned, you'll see what Stonehenge was really meant for!"
Ferdinand (H.A.): "You shouldn't be here, leave the investigation to the scientists."

Theorist leaves. Ferdinand turns to you.

Ferdinand: "Alright, now that we're here, there is much to do.

Speaking to the Archaeologist each time will reveal new objectives.

Ferdinand: "Before your arrival, I noticed a small etching in the side of the stone. I'm having a little trouble deciphering but maybe a fresh pair of eyes is just what this needs."

Objective 1: Decipher the etching (Puzzle Option)

Ferdinand: "I could use a hand gathering some clues around the site. Anything you might think is suspicious, go ahead and pick up!"

Intro

For this prototype, I tested the second half of our core game loop - the HQ scene. I wanted to test whether this game mechanism, namely, having players collect evidence and deduce the fact, is engaging and fun for a player. I also wanted to know how well this can fit into our broader game.

Script

At Stonehenge, as the archeons tried to excavate the hidden treasures, the earth started shaking violently and the stones rearranged to form a new pattern. The archeons narrowly escaped the scenes and returned to HQ.

- Players returns from Stonehenge
- Supervisor Archon brings you to her office waiting room. You are to stay there until further notice... she needs to take care of some stuff.
- The players start to whistler
    - Player one says: "What we discovered in Stonehenge is top secret - the HQ needs to figure out a way for all of us to keep that secret"
    - Player two says: "No one of us must have an undisclosed background that triggered the Stonehenge. I heard a rumor that if anyone with lineage from the early people that built Stonehenge comes near it something would be triggered"
    - Player three says: "It must be our mentor himself. He always seems mysterious there must be something that he didn't tell us"

1. Focused Twine Prototype

Premise: You are a fourth year archaeology graduate student assisting Dr. Weatherson, who is leading the Stonehenge Plainside Excavation Project (2025-). He usually asks you to fetch items, but he occasionally allows you to catalogue artifacts the team uncovers. However, it seems like he is under investigation...

Key questions to answer:

- **Realistic site and "caretaking" mechanics**: How might players respond to a grounded Stonehenge world, starting from onboarding? How might we shed light on educational research on world heritage sites through gameplay?
- **Motivation of mystery:** When presented with a task ("file receipts") how do we engage players through suspicious details? What factors encourage them to immerse themselves (e.g., characterization, " hands-on" detective work) into the conspiracy and continue searching for info?
- **Narrative pacing and decision-making**: How might we gradually reveal information to sustain continued interest? How do players decide which areas to search first, and why?
- **Exploration and environmental detail**: Even with text-only, how do players explore scenes, gather information, and stumble upon "delight" features (such as sheep)?

1. Focused Twine Prototype

This is Arch, which is a Stanford team composed of Shana, Jonathan, Lina, and Jiahui.
We are working with Meta's Global Historical Archive to fnd new ways to encourage visiting world heritage sites in VR.

This prototype is intended to test our narrative framework. We would love your stream-of-consciousness thoughts as you navigate between story nodes, targeting these questions:
1. When you are asked to make decisions, what goes through your mind?
2. Are there moments that draw you into exploring Stonehenge, or distancing yourself from the site?
3. If you had the magic power of revision, what would you like to change to make this experience better?

To start from the beginning, click the colored **text**.

To get a truncated 1-node summary of the premise, click **here**.

To bypass the intro entirely, click **here**.

You,

... what name do your friends call you?

, are a 4th year graduate student in archaeology and anthropology, fulfilling your field work requirement.
Your thesis is about

... well, you're still unsure, but it's about the inheritance of memory, death, and conservation?

.
You are also interested in gold metalworking, ancient architecture, and of course,

coffee

.

You found this work-study **opportunity** through your thesis advisor.

Where will you go next?

Dr. Weatherson's office

the Stonehenge monument

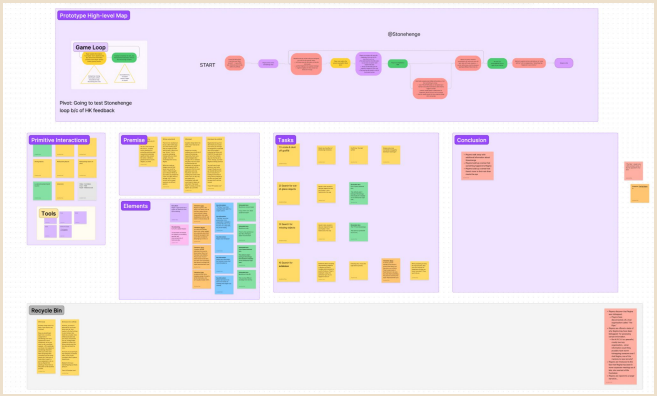
the plains by the excavation section

your phone

You arrive at the plains, dotted with white sheep.
Investigate the dig site
Observe the wandering sheep

Run through your **actions**.

2. Focused Unity Prototype



Ideation and Structure

- **Premise:** You're a new recruit at the A.R.C.H., a secret society dedicated to protecting, archiving, and researching historically significant sites around the world.
- **Key questions to answer:**
  - **Story Premise**: Does giving users a brief story premise (before putting them into an HMD) increase their engagement with the activity?
  - **Intrinsic & Extrinsic Motivations**: Given an opportunity to explore Stonehenge in VR, and a list of tasks, how much will players wander of their own accord?
  - **Non-destructive Mechanics**: Will players enjoy an experience where their tasks and tools are constructive, rather than destructive?
  - **Information Availability**: Players are given a tool to discover more info about the location. Will they use it beyond what they are tasked to do? Will that ever lead to information overload?
  - **Cliffhanger Ending**: The cliffhanger happens suddenly when all the tasks are finished. Even though players don't have much attachment to the story yet, will the cliffhanger ending make them want more?

2. Focused Unity Prototype

6.

Aggregate User Insights from Parallel Paper & Unity Prototypes and Test (late April)

Our Playtests

Context

- ~15 minute experience, on Twine and Unity VR
- Facilitator, notetaker
- In-person (VR) and over Zoom

Participants

- College Students
  - Stanford and external
- 15 total playtests: 7+ for Twine, 8+ for Unity VR

Procedure

- Player takes control, audio / visually recorded
- Participants asked to narrate thoughts aloud
- Post-game debrief questions per participant

Metrics

- Engagement with the narrative and mechanics
- Successes and failures, following our KPIs
- Post-game survey questions, following our KPIs

User Insights

	Insights	KPIs
Design for delight	• **Discovery** – especially self-motivated discovery – should be **rewarded**. • They need to know the **possibility of discovery** exists. • The best reward is being **able to do something "on their own,"** or from their own initiative. • **Unexpected**, **“chance” encounters** with surroundings, such as a lock or sheep	• Players reach the **immersive state of “flow”** with prolonged interest in finishing the experience. • Players are **willing to play another episode** X days later. • Players show **continued mental and physical interaction** with the characters, narrative, and mechanics. “The mystery really pulls me along.” “I unlocked it! What does it do? Did it do anything?”
Provide reasons to move people, and mechanics to drive them forward	• People **hate being stuck** on something they **have** to do, especially if there is no clear justification (for story, or delight). • People are **happy** to spend a long time trying to do something they want to do, even if (and especially) if they feel it's something **"not built into the game"/"game breaking."**	• Players complete each milestone within **expected time intervals**. • Players reach the **immersive state of “flow”** with prolonged interest in finishing the experience. “I’m ready to move on now.” “That I need to find all the dust is a little frustrating.”

User Insights

	Insights	KPIs
Tactility is VR's bread and butter	• The more **"tactile"** the experience, the better. • Integrate more particle effects, more sound effects, more things that will **react to the virtual "physical" presence** of the player.	• Players show **continued mental and physical interaction** with the characters, narrative, and **mechanics**. "I love the pop! every time I finish a task!" "It's fun to see the little explosion when I brush away the dust."
People connect with grounded narratives	• When people enter a VR experience, they **explore from the "I"** perspective: a **story they can relate to** is key. • The **less grounded** the story, the **more disconnected** it will feel from the sites themselves. • People feel **immersed** and can get **excited** by archaeology "**grunt work**" (e.g., filing receipts) when they feel like there is an **overarching purpose**	• Players show **continued mental and physical interaction** with the **characters**, **narrative**, the **world at large**, and mechanics. "The sci-fi 'HQ' piece there at the end lost me a little." "I really like how grounded that was. It felt more connected to Stonehenge."

User Insights

	Insights	KPIs
People connect more with a world that is alive	• We should add living creatures, wind, sunlight; to show it's **not static**, and the world will change with them • We should explore how to create a world that **encourages interaction** (“What could happen if I ….?”) and **demands attention** (“What could be around the next corner?”)	• Players show **continued mental and physical interaction** with the **characters**, **narrative**, the **world at large**, and mechanics. • Players reach the **immersive state of “flow”** with prolonged interest in finishing the experience. “I wish the tourist had more stories!”
Align the mechanics with the game’s goals	• Offer **player-aligned objectives** that **encourage exploration** and **organically integrate mechanics** (e.g., as part of an engaging narrative) • At the cross-section of "designing for delight" and "grounded narratives;" mechanics should provide a **natural envoy between the player/avatar and the world/characters**.	• Players show **continued mental and physical interaction** with the **characters**, **narrative**, the **world at large**, and mechanics. • Players reach the **immersive state of “flow”** with prolonged interest in finishing the experience. “Why is such an important organization asking me to sweep?”

User Insights

We need gameplay that supports the players' unique emergent narratives

Insights

- Players **enter** the game world with their **own expectations**, and even with the **game's narrative arc**, players also have their **own coinciding "arc"** of self-discovery
- We should build a sense of **mystery** / **exploration** that **enhances their buy-in**, and also motivates the player to come back ("What else can I do here?")
- Support the **unique experiences of individual users** and reward the players' choices so that the player will feel the **impact of their interactions**.
- Create a story that **affirms the player's presence** and **impact on the world**.

KPIs

- Players show **continued mental and physical interaction** with the **characters**, **narrative**, the **world at large**, and mechanics.
- Players reach the **immersive state of "flow"** with prolonged interest in finishing the experience.
- Players are **willing to play another episode** X days later.

"I wondered what would happen next."

"Wow! I'm so glad I pieced everything together and figured out the mystery!"

"I wish I had a bar that told me I 100%'d it, I don't know if I got everything or not"

What We Learned

We need to design for delight.

Provide reasons to move people, and mechanics to drive them forward.

Tactility is VR's bread and butter.

People connect with grounded narratives.

People will connect more with a world that is alive.

Align the mechanics with the game's goals.

We need gameplay that supports the players' unique own emergent narratives.

Next Steps

Format our synthesized user insights from our individual flare and focus prototypes, using Meta's template

Integrate our key insights and build a cohesive VR prototype in Unity, using a modified Twine script as a "Bible"
→ construct grounded narrative (e.g., dialogue), distinguish between must-haves / nice-to-haves / delight features, make world more alive with environmental detail, integrate more Stonehenge-specific knowledge

7.

Customer Profile Interviews (early May)

Our Customer Archetypes

Real Customer Profile

The Time-Passer:
Someone who wants to immerse themselves in new locations

The Wanderer:
Someone who wants to travel, but can't for whatever reason

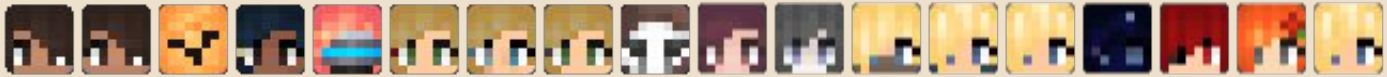
The Story-Seeker:
Someone who approaches narrative as an opportunity to connect with the experiences of others

The Learner:
Someone who desires rich cultural experiences, beyond the classroom

Meet Layla

The Time-Passer & The Story-Seeker

- A 17-year-old high school student
- Actively plays Minecraft and already loves to travel in digital worlds, but cannot travel to their real counterparts
- Has learned the history in school, but wants a “fun” way to further engage with the stories without the rigid structure of a curriculum
- Loves experiences that **“combines my love of storytelling with my love of video games. And so it’s this perfect harmony of my personal preferences”**



Meet Simon

The Wanderer & The Learner

- Age: 25 years old
- Job: PhD student in Computer Vision
- Marital status: single
- Location: Munich, Germany

- Desires: **“Unique experiences that help me understand the world and connect with people on a deeper level”**
- Interests:
  - Traveling: visited 30+ countries
  - Photography: “(...) so that I can relive my memories and revisit the places”
  - Learning about new technologies, history, & art
  - Video & board games, reading & writing fiction

Product Marketing Strategies

- **Get KOLs (key opinion leaders) such as game bloggers to try our product and share with their user base**
  - Our product exists at the intersection of several genres, and KOLs give us an “in” to specific subcategories of our target audience– whether they are **wanderers**, **learners**, **story-seekers**, and **time-passers**.

- **Organize Meta in-person play events to reach initial users that fit our profile and get pre-release feedback**
  - VR is still emergent, and its user base is small. We can expand this base by giving a greater diversity of users a free trial of the medium and our product, even before they own or purchase headsets.

- **Utilize existing Meta GHA connections and resources to target high-impact publications, users, and influencers**

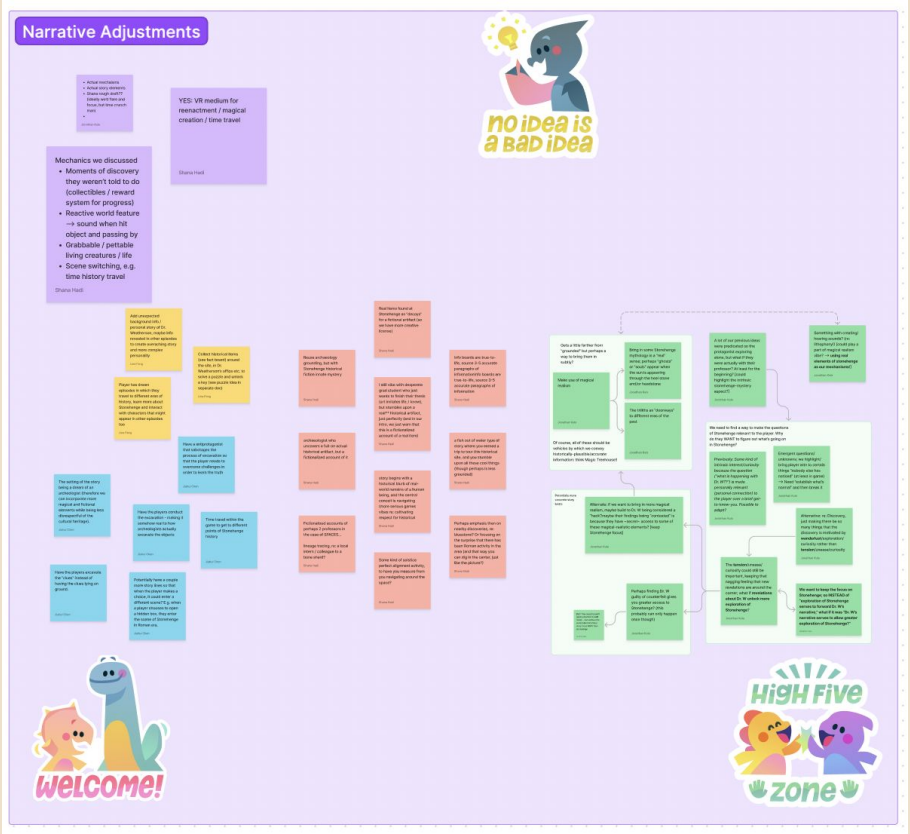
8.

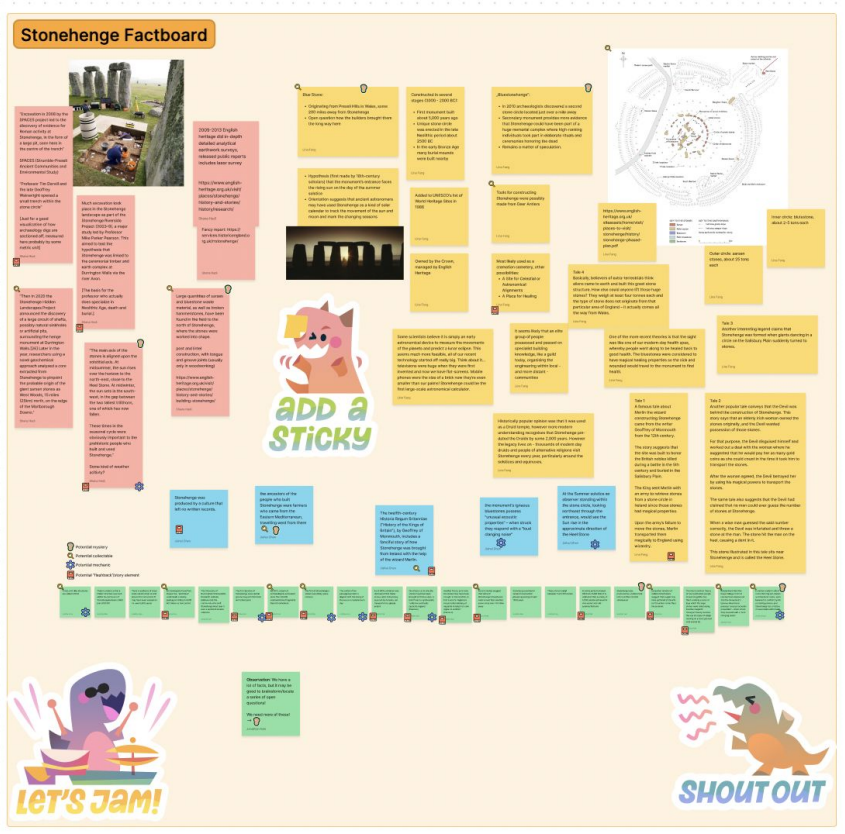
“Thin Slice” Unity VR Prototype and Test (May)

Key Design Changes and Goals, on Figma

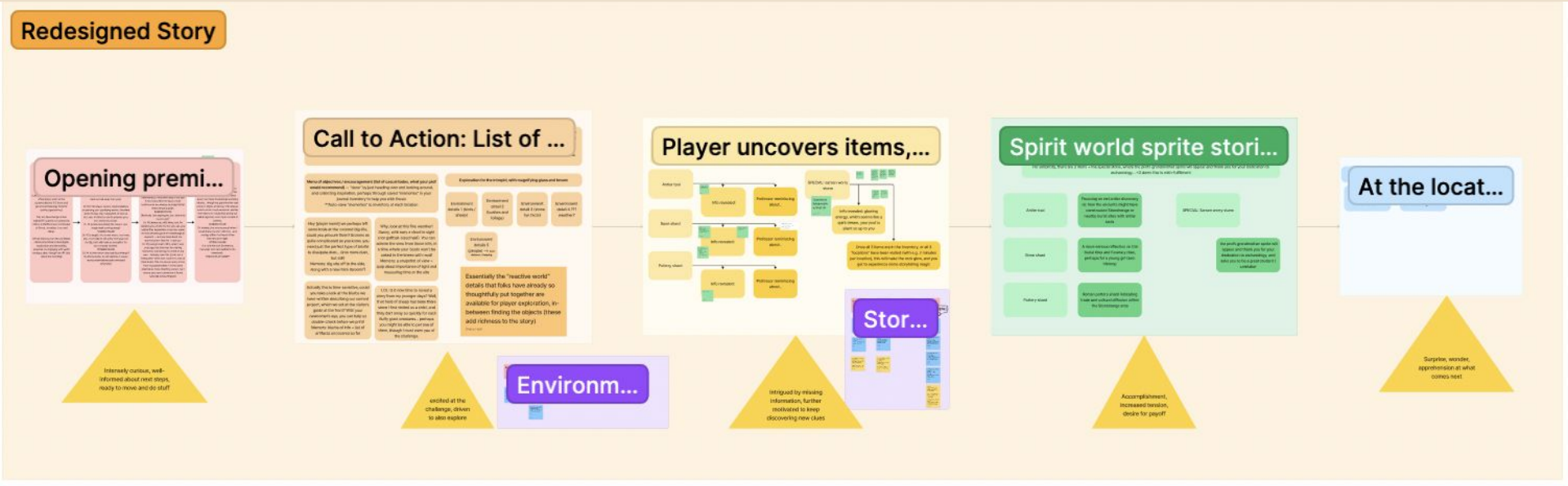
- **Stonehenge narrative focused on the inherent mystery of the site itself, not an external source**
  - How: you are an archaeology student searching for (thesis) inspiration, centered on the objects you discover
  - How: More integrated historical / site-specific exploration, pop-up stories on actual historical artifacts discovered at the site
- **Fewer required “must-dos,” emphasis on “delight” and intrinsic motivators (to engage with characters, to explore)**
  - How: 3 key objects to (easily) find within the area, which will “unlock” your professor sharing fictional stories about their life + the object
  - How: Reactive world, like clouds, birds, and immersive sound
- **Built-in onboarding that introduces narrative premise along with mechanics**
  - How: intro with professor/player dialogue in a “cut-scene”

**WIP: Figma Redesign Board





**WIP: Figma Redesign Board



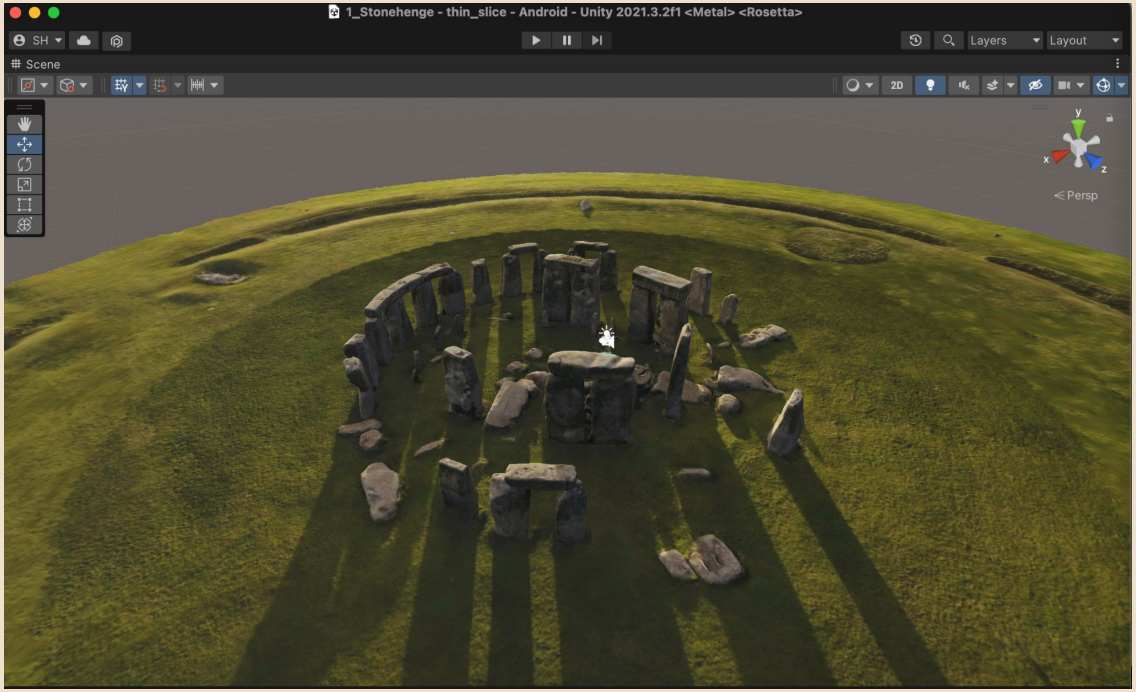
Rapid User Testing Key Insights

- **Wizard of Oz guided Stonehenge narrative, 2+ Users,** product was a rougher version describing the premise/plot, and dialogue
  1. Grad student's thesis is niche and not necessarily compelling (tester compared to Indiana Jones or the "flashier" prior conspiracy angle), but they would be interested in still "succeeding" via exploring the world + their thirst for knowledge through them
     a. "Archaeology isn't flashy" and "the thesis idea is more wholesome and gives you more agency"
  2. For the initial player/professor conversation, remove the player "dialogue" and instead leave pauses, would feel more immersive instead of "putting words" in their mouth
  3. Potentially have the professor "derail" you or try to "debunk your theories to make you stronger" since they are the only other built-up character → intrinsic motivation of wanting to impress your thesis advisor, and also connect with their stories about Stonehenge

Rapid User Testing Key Insights

- **VR demo limited world, cut-scene "onboarding," 3+ Users**, product was a dark room with floating text + dialogue on The Stanley Parable
  1. Previously, players were in a "loading scene" to teach mechanics before being thrust into the Stonehenge experience, but often skipped → meanwhile, this was a more immersive, "gentle introduction" to VR, especially with the narrative premise and professor characterization to help with intrinsic motivation to search with their help
  2. Stripped-down format, especially with limited text and audio, allowed for players to be "less overwhelmed" to VR and also the intricacy of our narrative-focused experience, before they entered the scene
  3. More seamless integration of the mechanics (such as foreshadowing the sarsen stone that will switch players across the "real" and "story" worlds at Stonehenge), with the professor as mentor / "natural" explainer

Current Unity VR Work in Progress



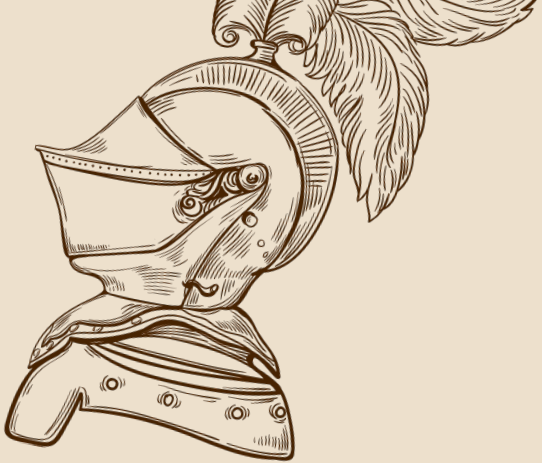
Includes: Updated assets, reactive world features (clouds! birds! fire?), mechanics (tag-along inventory), floaty sprites

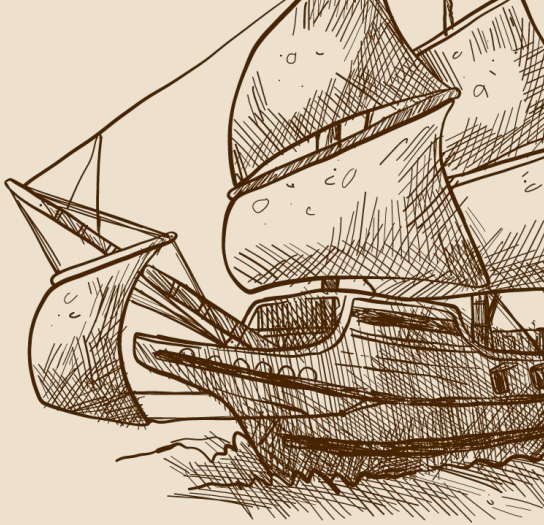
9.

"Thin Slice" Unity VR Prototype (May, June)

see: the first part of this presentation!

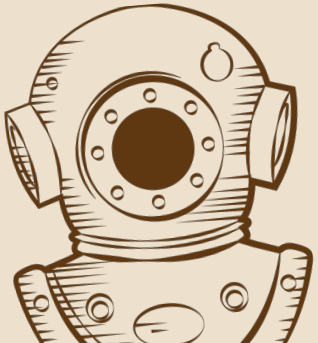
Thank you :)





ARCH

Where will you Quest?



Stanford Team ARCH (CS 210 ‘22)
Shana Hadi, Jonathan Kula, Lina Fang, Jiahui Chen