

MGD YEAR ONE

ASHLEY COOK
2020 -2021

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01

MUSEUM AS ARTIFACT

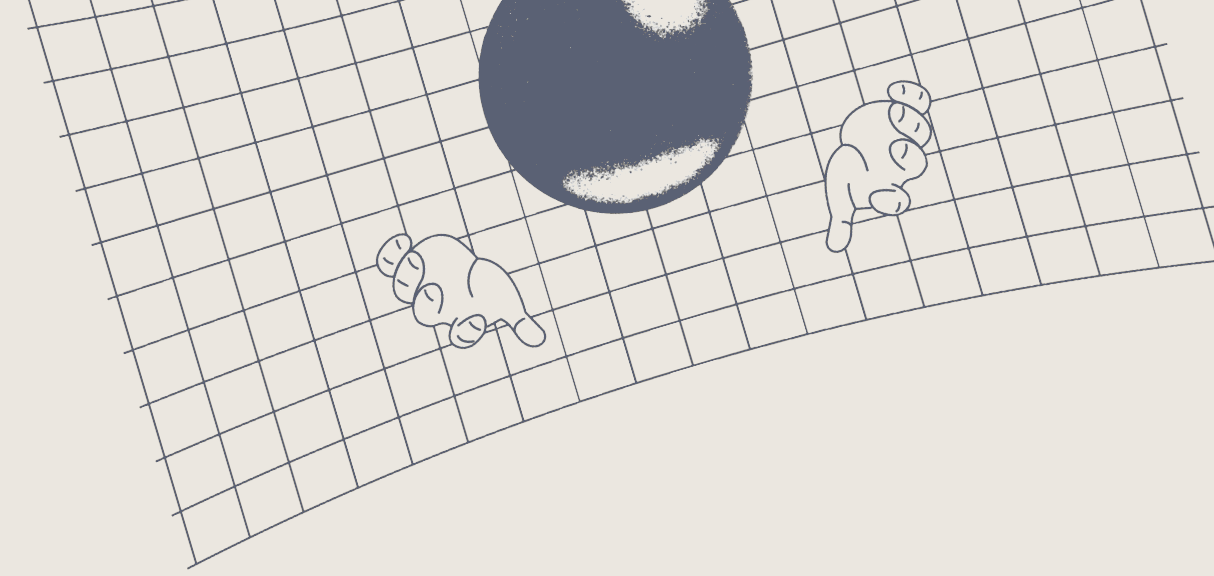
VISUAL EXPLORATION

RESEARCH QUESTION

HOW MIGHT A DIGITAL TRANSFORMATION OF A MUSEUM BECOME A MORE DEMOCRATIZED, DECOLONIZED AND INCLUSIVE EXPERIENCE?

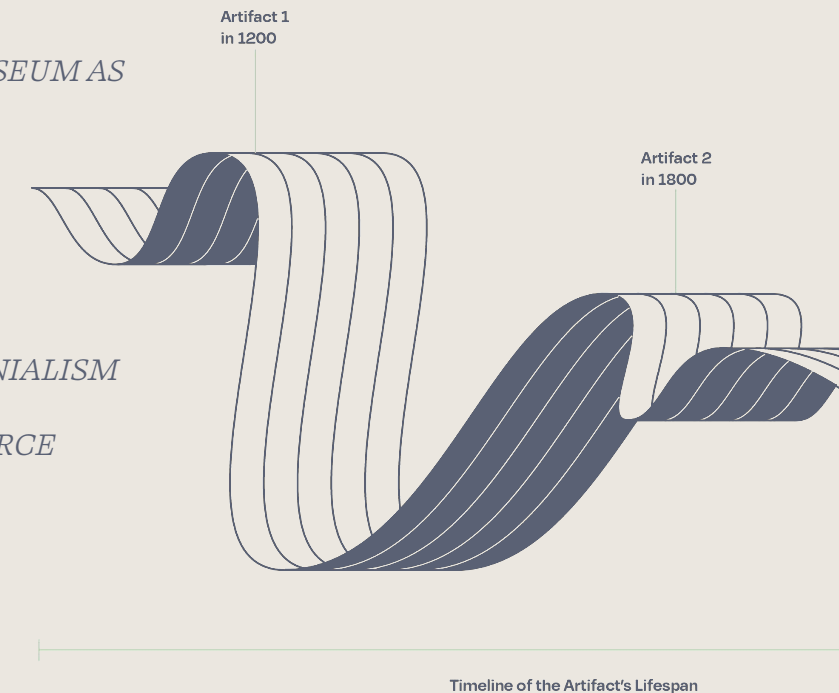
How are museums problematic? Museums are cultural powerhouses of Western countries that store priceless artifacts from around the world. Some of these artifacts were stolen & looted from their home culture during the colonial era to live in these museums & most have not been returned. It is not a Western museum's place to display & keep stolen items from other countries. By doing so, museums are upholding colonial power & undermining other cultures. Aside from its international colonization, museums are domestically marginalizing communities. The museum is seen as a white space, with black people only making up 6% of museum goers, & only 4% of museum staff.

Aside from the obvious fact that all American land is stolen indigenous land, The American Museum of Natural History & Smithsonian (among others) hold the skeletal remains of Native Americans & Africans within their collections. Not only is it dehumanizing, these institutions rarely acknowledge the role of genocide & slavery within their museums. On top of that, there is a lack of representation of marginalized communities, with museums placing more emphasis on Euro-centric work, & English-only labels & headsets. When museums do showcase marginalized communities in their exhibits, the museums rarely ask for permission from the communities or listen to their stories.



DECONSTRUCT THE MUSEUM AS

- + EURO-CENTRIC
- + A WHITE SPACE
- + A STATUS OF POWER
- + A REMNANT OF COLONIALISM
- + A MARGINALIZING FORCE



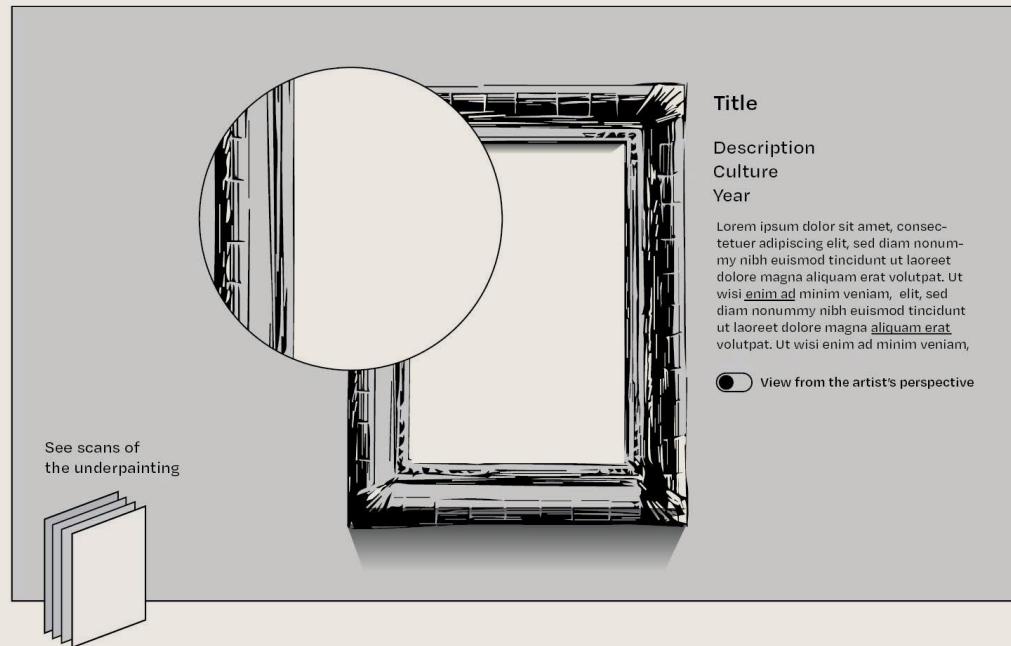
ARTIFACT AS ARTIFACT

PHYSICAL MUSEUM TO ONLINE SPACE

+ What if you took a museum as it is now & transformed it into a digital space?

+ How could the design of this space help to alleviate some of the negative feelings experienced by BIPOC in museum spaces?

+ How could a digital platform enhance the capabilities of a museum?



An exploration of digital enhancements not possible in physical reality could perform. Explored common digital features like zoom, toggles, links, & layers.

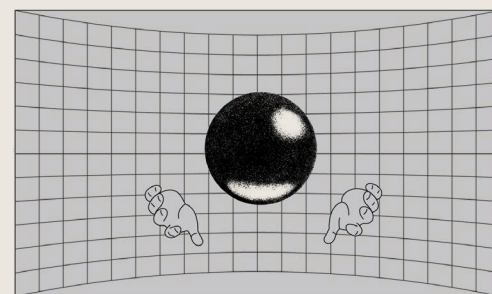


"Floors" could be vertically scrollable by geographic location & time could be horizontally scrollable. Exploring a way to recreate physical familiarity with the scroll feature.

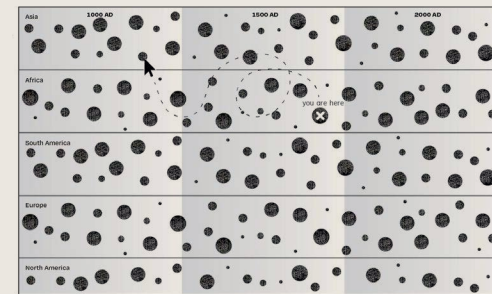
Visualizing how wall height & angles could recreate daunting architecture that both inspires visitors & intimidates.



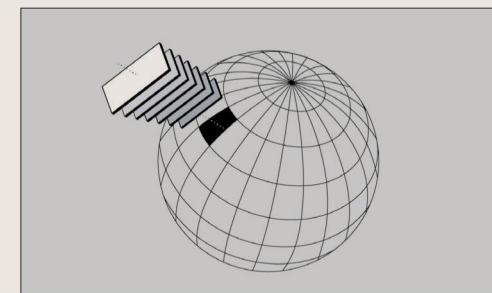
A user interface that's visually customizable for the visitor's comfort level & expectation for what an ideal museum looks like to them.



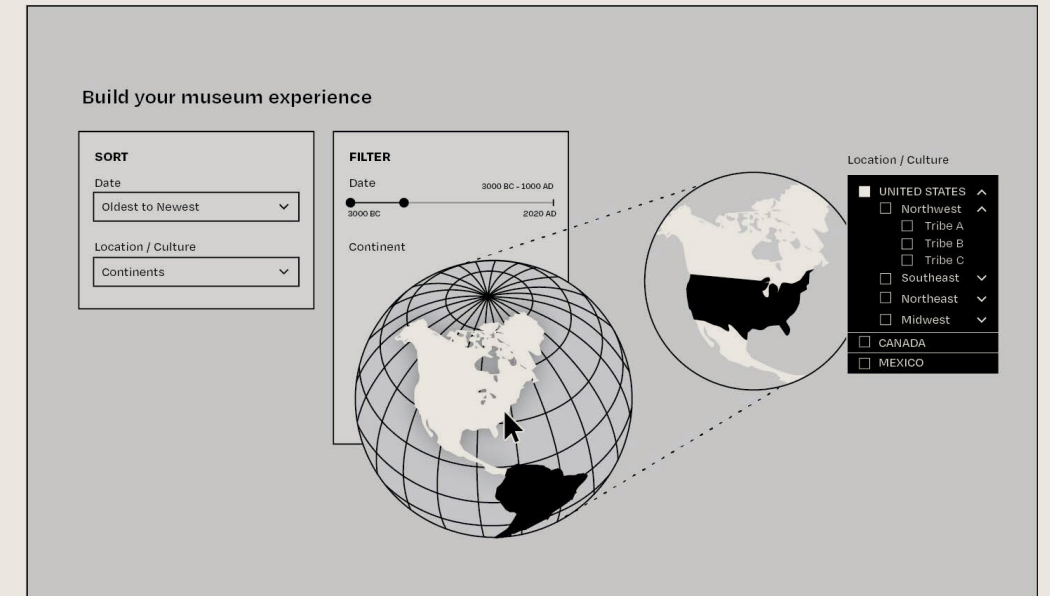
Exploring ways to show the reality of objects digitally. Hands could help gauge the relative size of an artifact in a 3D environment that's viewable from all angles.



Using a map to navigate through the museum. If it's organized by geographic location & time, the size of the artifact could denote popularity.



The museum navigation could be a 3D filing cabinet of artifacts instead of a 2D map.



Exploring how a filterable & sortable museum could create a Build Your Own Museum depending on a visitor's preferences

To narrow down into a cohesive set of explorations, I chose the Benin Bronzes as a case study in order to dig deeper into the life of an artifact.

BENIN BRONZES CASE STUDY

A BRIEF HISTORY

The Kingdom of Benin, located in modern-day Nigeria, flourished between the 1200s-1800s AD. The Kingdom was ruled by Obas, with the Obas reaching their height of power in the 1500s. Oba Ewuare rebuilt the city & royal palace around this time. By the 1800s, the British were trying to extract Benin's rubber & palm oil. The Oba tried to stop all trading with Britain, but in 1892 the British showed up to a religious festival without an invite. The British burned the city to the ground after being turned away & looted the Benin Bronzes & other treasures from the city & palace. The Benin Bronzes are not just decorative -- they tell the entire history of a civilization that doesn't have "written history" in the way Western culture would normally categorize it.



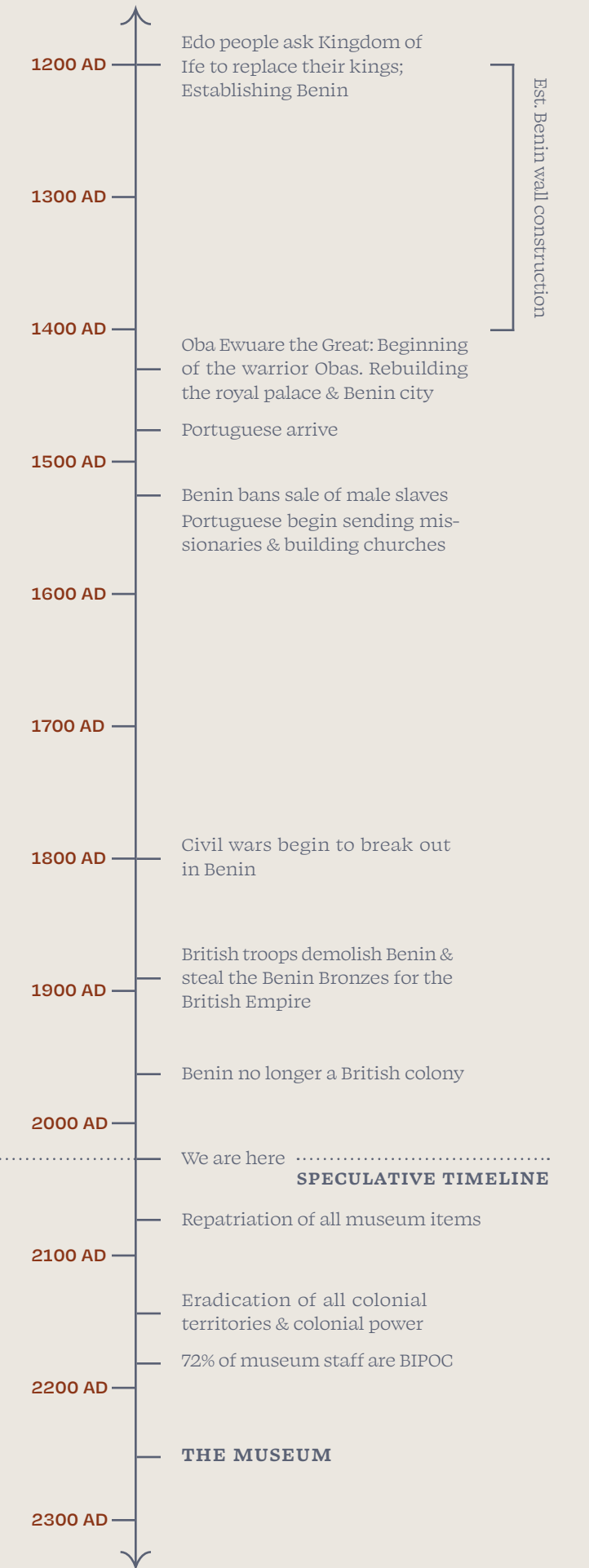
Credit: 3D model by MAACambridge

ARTIFACT AS PERSON

SPECULATIVE DECOLONIZED MUSEUM

+ What if museums showed the life of the artifact from the artifact's perspective -- personifying & empathizing with the artifact?

+ What if a digital museum of the future recognized the time the stolen artifact was confined to Western museums as part of its oppressive history?



MUSEUM AS ARTIFACT

WHERE DO THESE STUDIES LIVE?

The last sprint of this project focused on creating a digital museum that exhibits the modern museum as an artifact as a call for the repatriation of contested & stolen items. This museum implies that museums as power structures & hoarders of colonial

items will become an artifact of the past in the near future.

The concept for the Museum of Stolen Items is that it showcases the top 10 contested artifacts in Western museums. Instead of the arti-

fact being talked about in the past only, the artifact has its entire lifespan shown- from its creation to its use to its placement in a museum to a repatriated future. Users are able to jump between being a museum visitor & being the artifact.

PERSON AS ARTIFACT

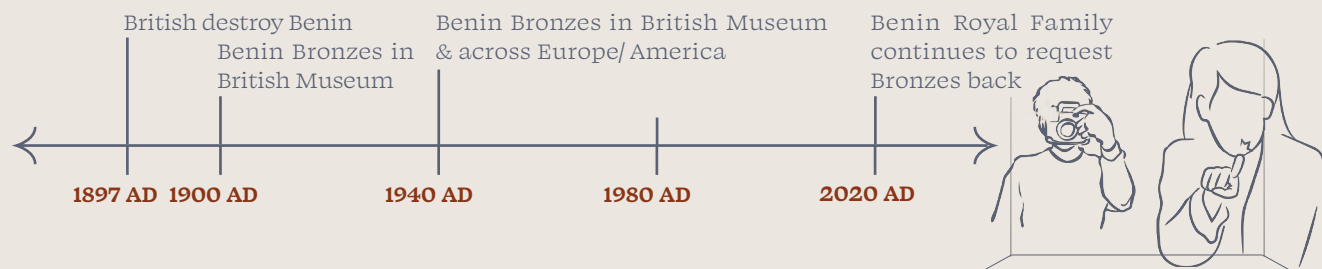
MUSEUM ENABLERS

+ What if museums showcased the history of the visitors & the exchanges between human hands instead of the history of the artifact?

+ What if the artifact becomes decentered to bring attention of museum enablers: governments, donors, board of directors, senior staff, (white) visitors, (white) artists.

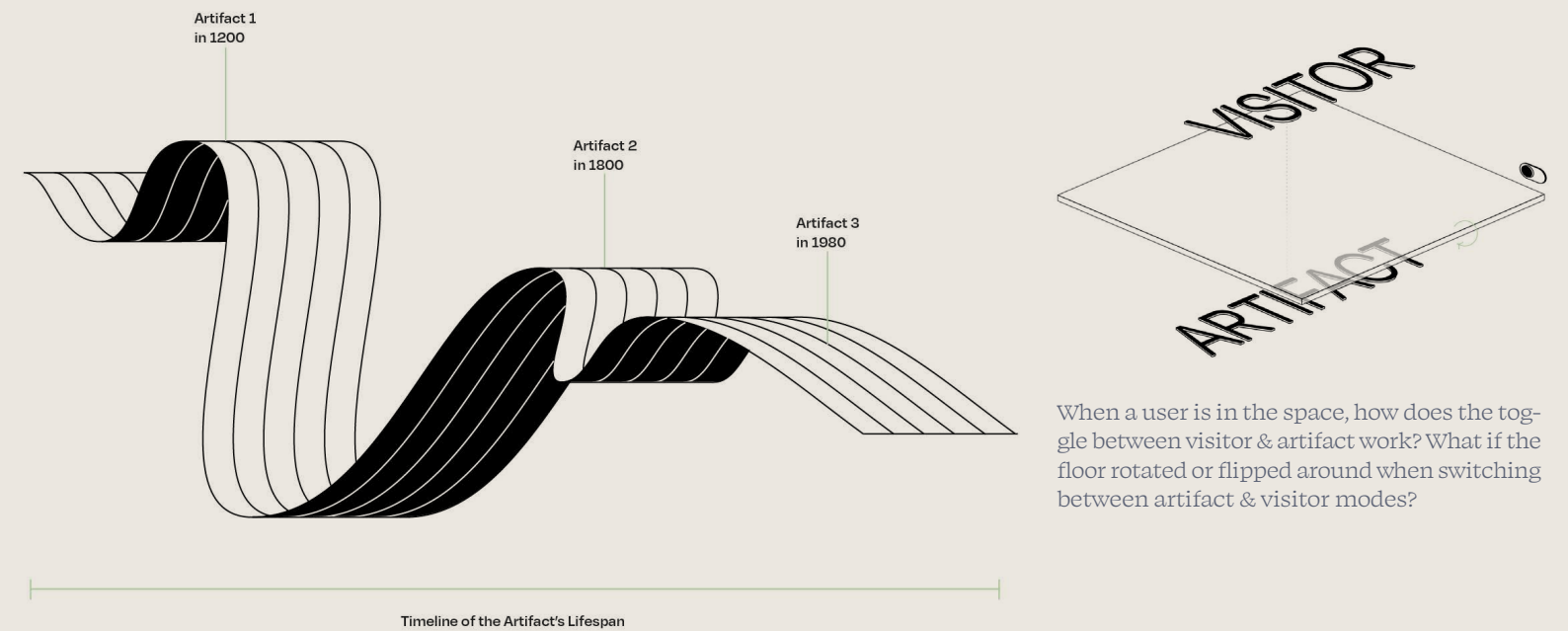


Credit: Gionale Dei Santi; public domain



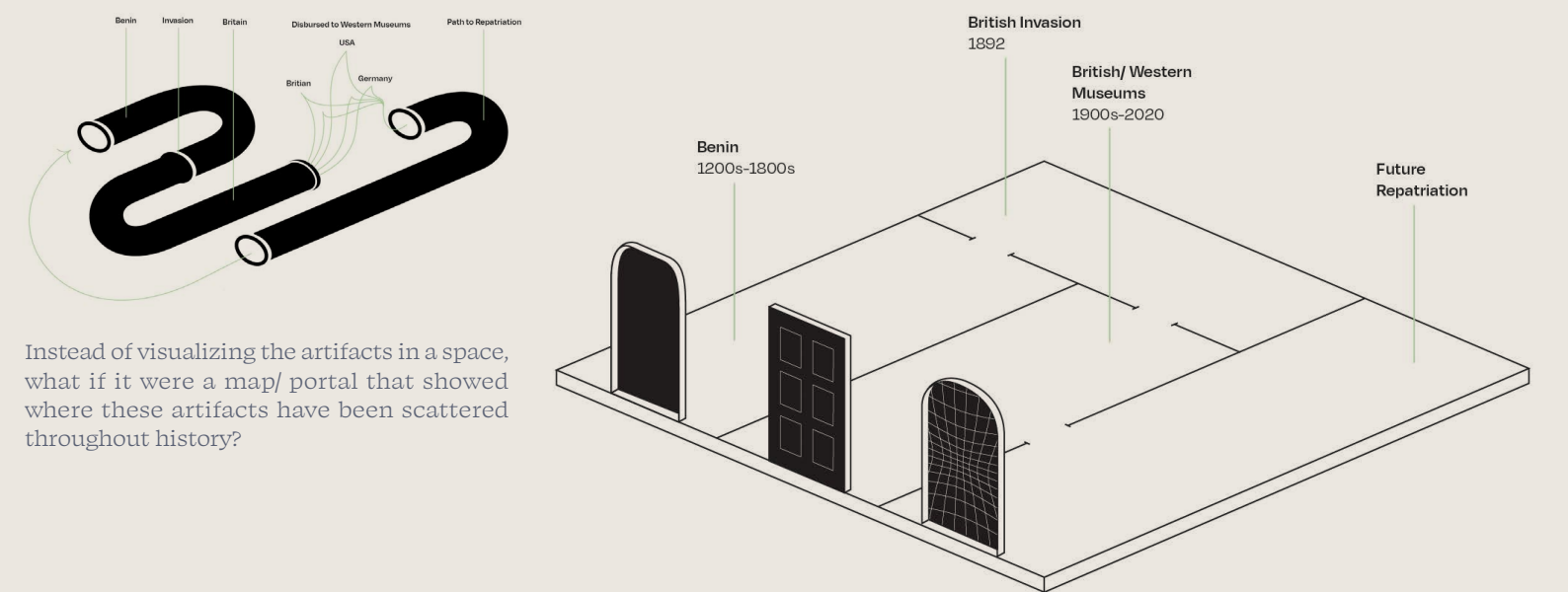
VISITOR BECOMES THE MUSEUM WALL

In this scenario, the museum visitor becomes the wall/ artifact & views the other visitors throughout the years. Time lapses by the change of fashion in the visitors. There is a stark contrast between the artifact's original setting & handlers compared to the Western museum's visitors.



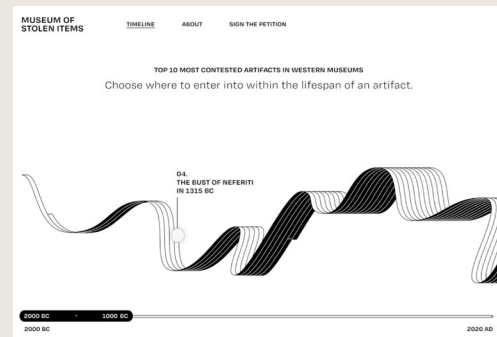
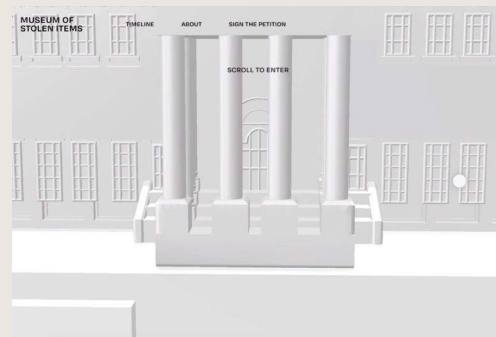
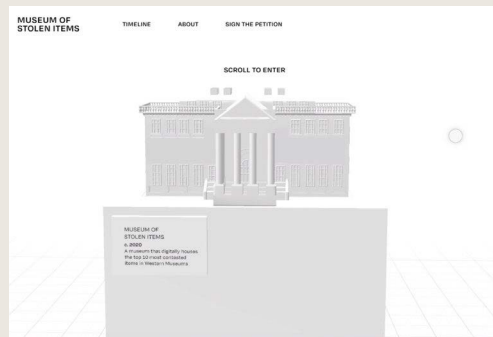
When a user is in the space, how does the toggle between visitor & artifact work? What if the floor rotated or flipped around when switching between artifact & visitor modes?

An exploration on the artifact lifespan as a version history of its life. The date the artifact was created is always listed, but the rest of its lifespan, and its future, is rarely talked about.

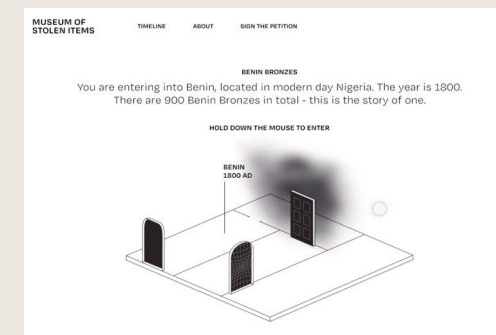
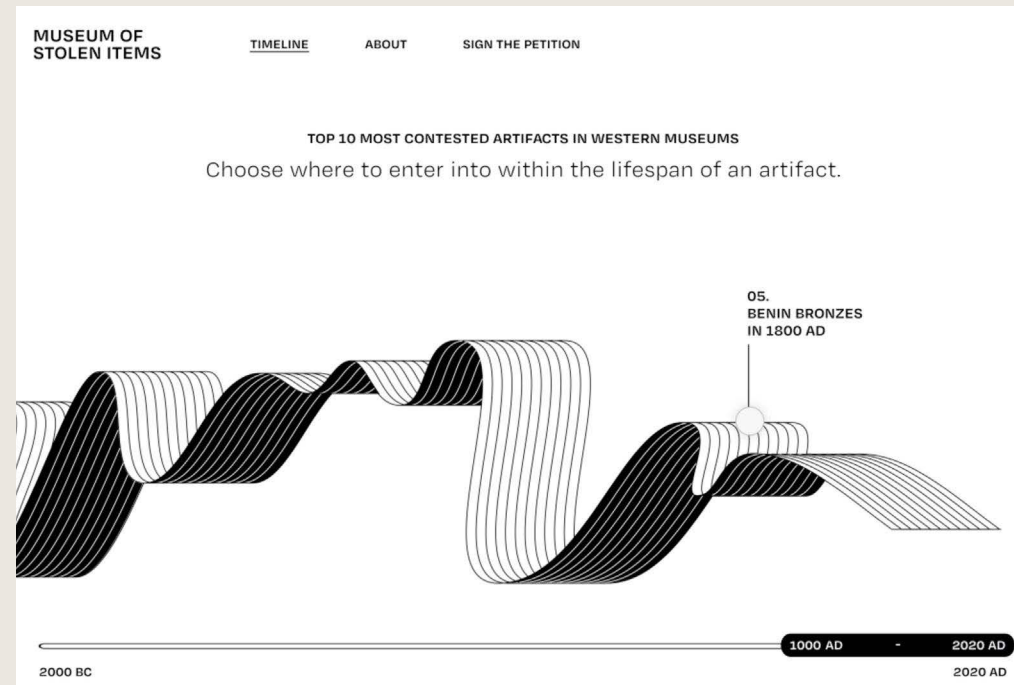


Instead of visualizing the artifacts in a space, what if it were a map/ portal that showed where these artifacts have been scattered throughout history?

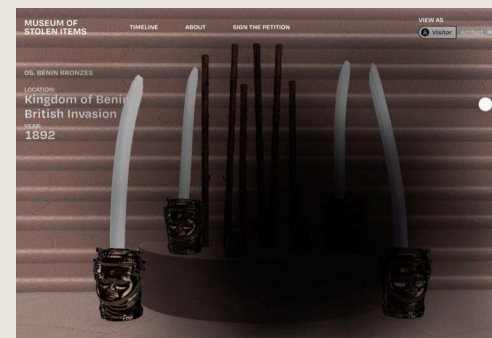
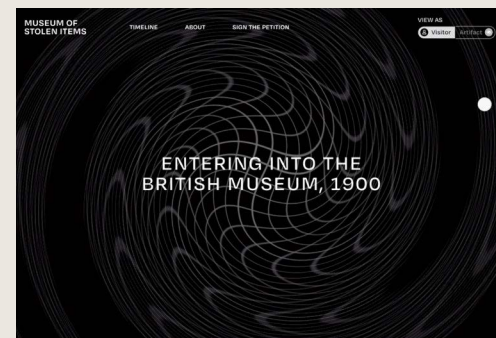
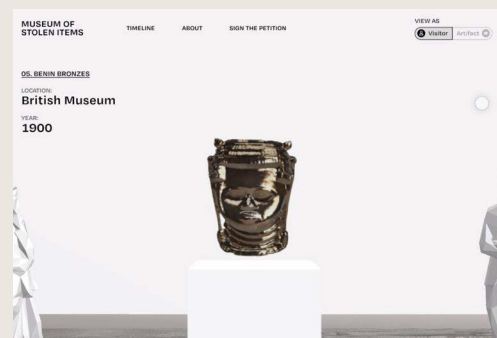
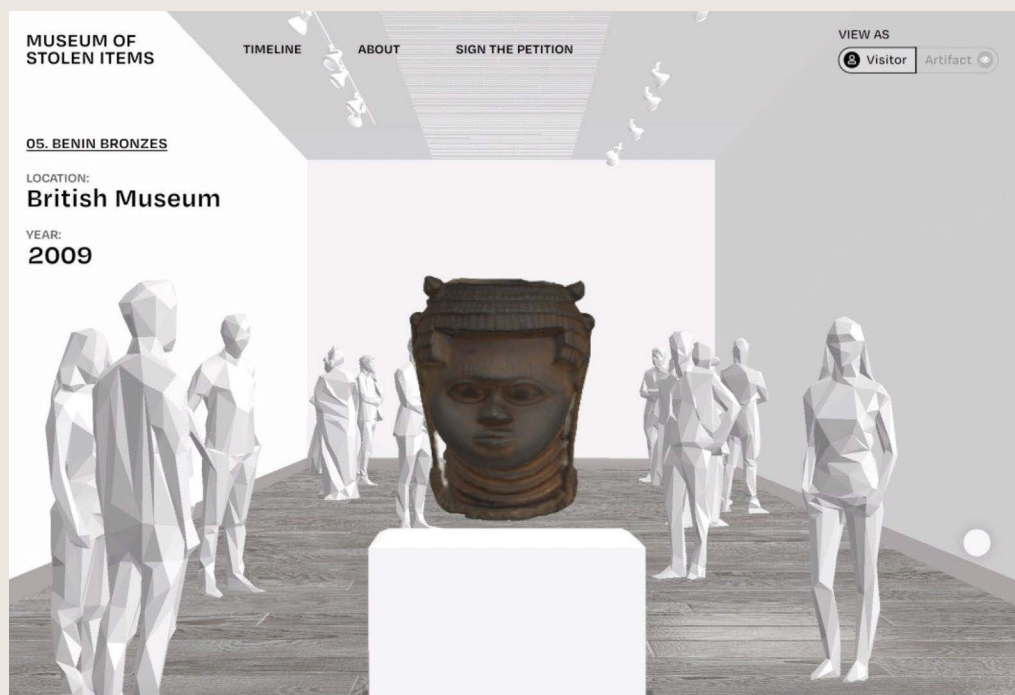
A study on how the timeline of an artifact could be represented as a 3D digital space. 3 doors representing the past, present & future.



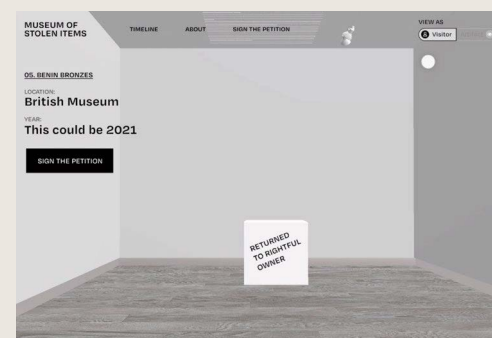
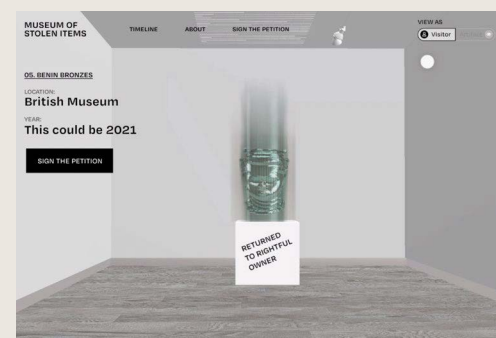
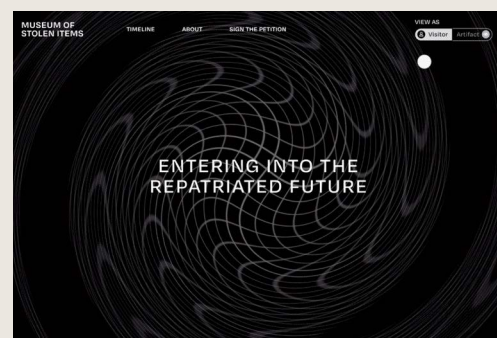
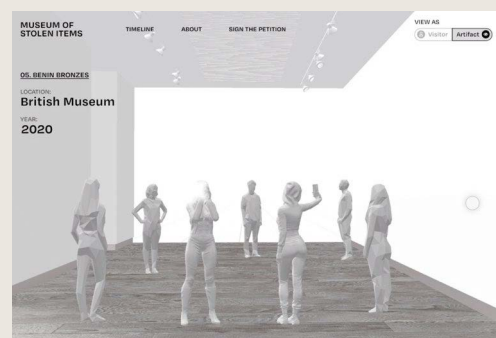
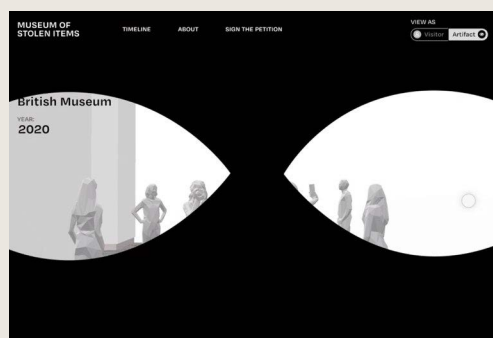
Enter the site to a museum on display → Scroll to enter through the museum doors → Taken to a timeline view of the life of the top 10 most contested artifacts



You can enter to view the artifact at any point of its life on the timeline → Overview of the artifact's "room" to orient users



Scrolling moves you through time with the visitor's fashion changing & the shine of the artifact through the years → Enter into the British Museum, 1900 → Warp denotes a change of hands, aka entering a new room → Scrolling takes you through time → Enter into the Kingdom of Benin, 1800



User toggles to "artifact view" → Scroll through time in the museum while being swarmed by visitors → Warp denotes a change of hands, aka entering a new room → The repatriated future -- a disappearing artifact in "visitor view" & the new environment for the "artifact view" → CTA to sign a petition for the repatriation of stolen items

<https://youtu.be/jXE2VLX-NJ38>

Credit: 3D models by the Museum of Archaeology & Anthropology at the University of Cambridge, The Imagining Center at Smith College, Biwenka, Limerick3D, WesternScienceCenter, Daken.Hoo, amforma, & Loic Norge

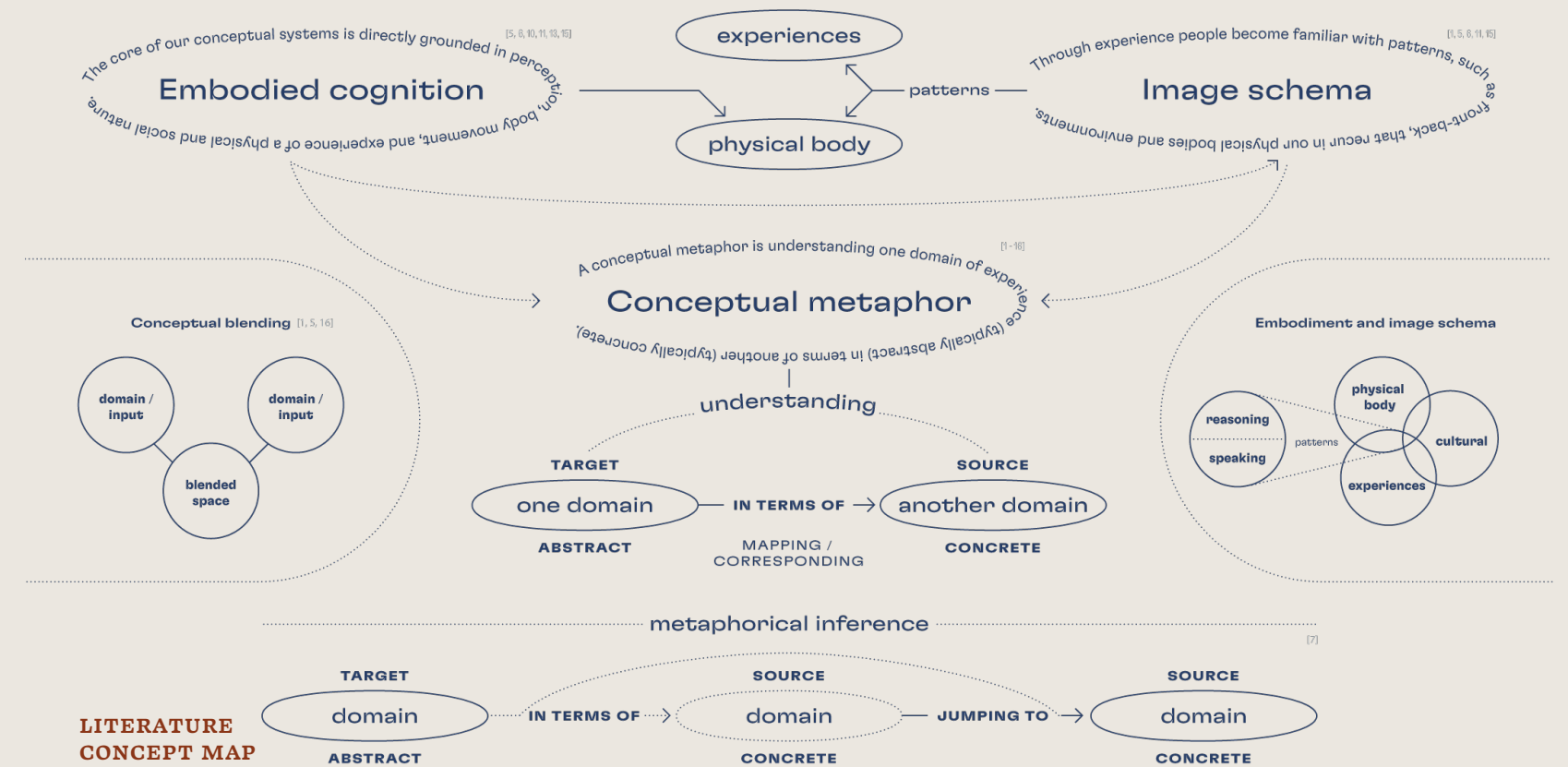
RESEARCH QUESTION

02

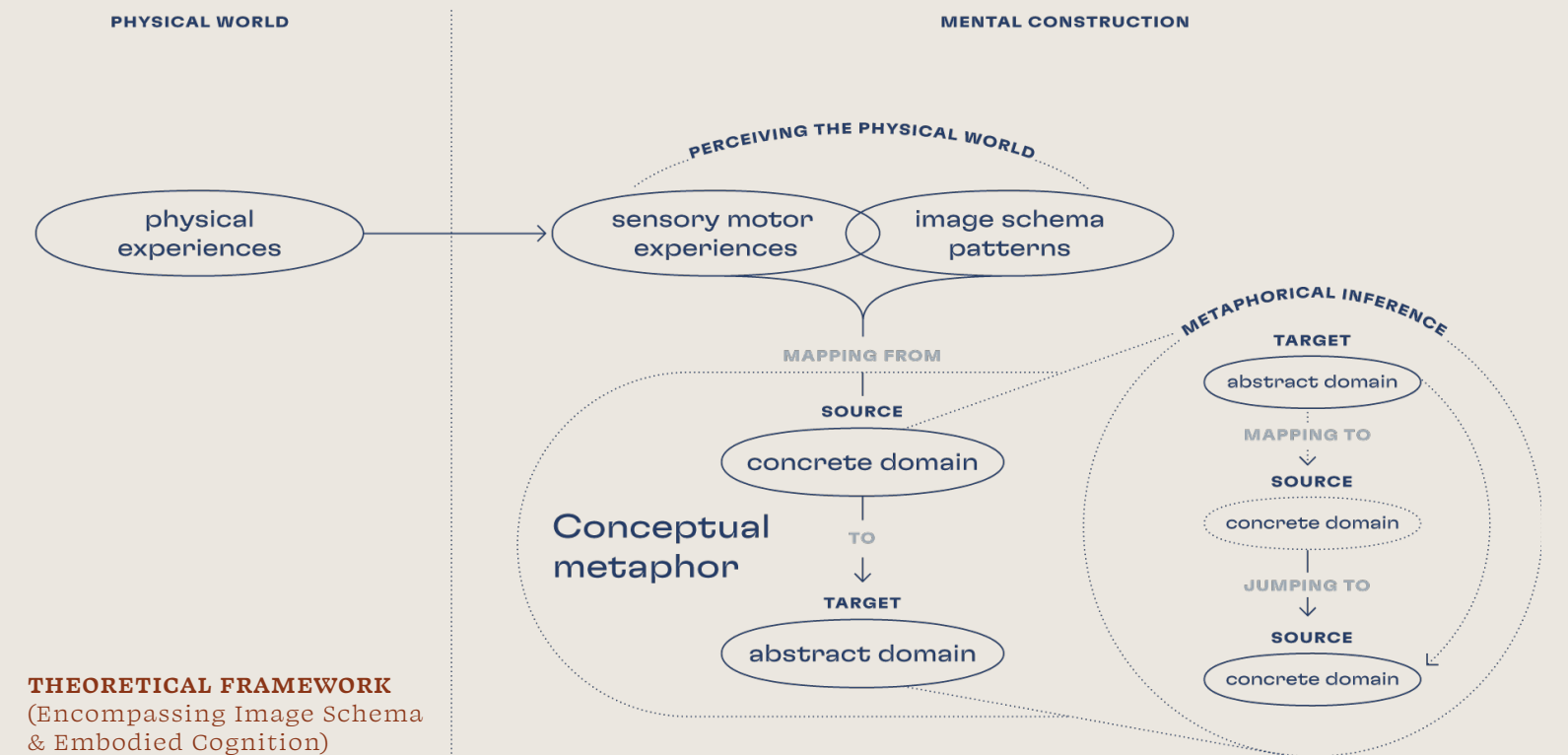
POST-WIMP FRAMEWORK

THEORETICAL & CONCEPTUAL FRAMEWORKS

HOW MIGHT A REDESIGN OF THE MAC DESKTOP SUBVERT THE LONG ACCEPTED UI CONVENTIONS OF WIMP INTERFACES BY SHIFTING AWAY FROM REALITY-DRIVEN METAPHORS?



CONCEPTUAL METAPHOR



THEORETICAL FRAMEWORK (Encompassing Image Schema & Embodied Cognition)

RETHINKING THE MAC DESKTOP

Redesigning the conventional WIMP (windows, icons, menus, pointer) interface through the lens of our conceptual cognitive system

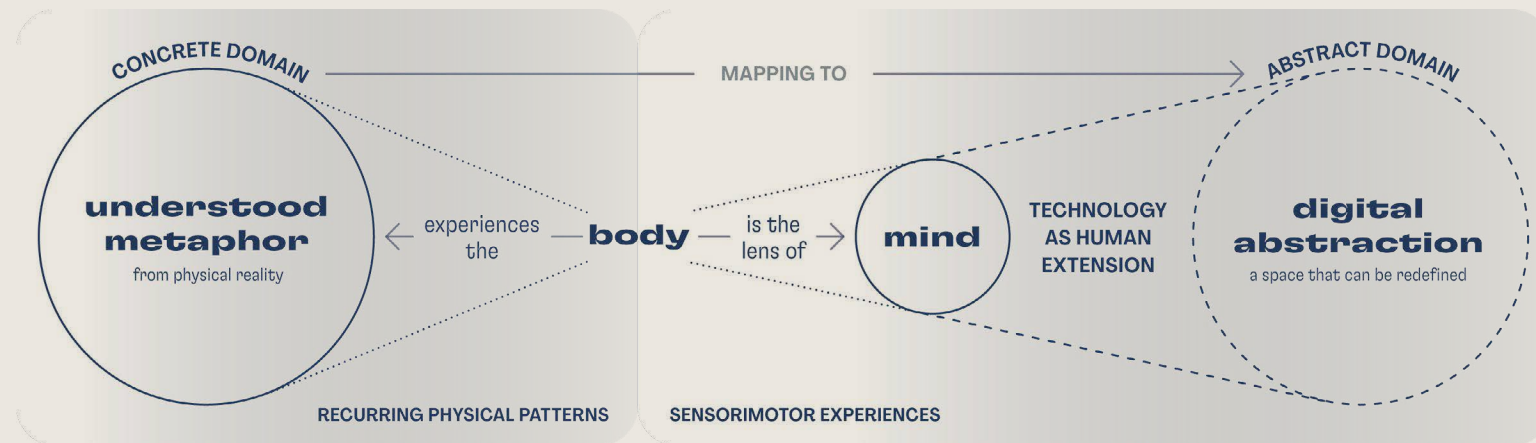
PROBLEM SPACE

How might a redesign of the Mac desktop subvert the long accepted UI conventions of WIMP interfaces by shifting away from reality-driven metaphors?

What if the Mac desktop was designed as an abstracted extension of ourselves, instead of as a design grounded in our physical realities? Taking literal metaphors from our physical world, such as the trashcan or the filing cabinet, limits the use of what the desktop could

be. Even the name, desktop, references a literal, physical space. For users who have grown up with computers, designers no longer need to cling onto these metaphors. Much more advanced interfaces can blossom from the abstracted use conceptual metaphors.

DIGITAL DOMAIN MAPPING FRAMEWORK



According to Embodied Cognition Theory, we ground our conceptual cognitive system in our perceptions of physical experiences and body movements (Wilson, 2002). The recurring patterns of those physical and bodily experiences create image schemas, such as front-back or up-down, that we use as a basis for our conceptual metaphors (Hurtienne, et al., 2007). Conceptual metaphors are central to our thought processes and help explain our everyday realities. They are our way of under-

standing abstract domains, which are usually complex ideas, in terms of concrete domains, which are well understood concepts that are primarily derived from our physical reality (Kövecses, 2020).

For example, the conceptual metaphor GOOD AS UP metaphorically maps GOOD (an abstract idea) onto UP (a concretely understood idea), in the phrase we hit a peak last year (Lakoff, 1980). By using the posthumanist idea TECH-

NOLOGY AS HUMAN EXTENSION, we can map a concrete domain, ourselves, onto an abstract domain, digital spaces. In this framework, digital technology is not seen as being separate from humans – what is technology if there is not a human to power or command it? Therefore, abstract digital spaces become an extension of us: our mind and body. We can then map new image schemas and conceptual metaphors onto the abstract domain in order to re-situate the Mac desktop.

SOURCES

[1] Gentner, D., and Nielsen, J.: The Anti-Mac interface, *Communications of the ACM* 39, 8 (August 1996), 70–82.

[2] Hurtienne, Jörn & Thuering, Manfred & Blessing, Lucienne. (2007). Image schemas: a new language for user interface design?

[3] Kövecses, Z. (2020). A Brief Outline of “Standard” Conceptual Metaphor Theory and Some Outstanding Issues. In *Extended Conceptual Metaphor Theory* (pp. 1-21). Cambridge: Cambridge University Press. doi:10.1017/9781108859127.002

[4] Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. University of Chicago Press.

[5] Sease, R. (2008). Metaphor's Role in the Information Behavior of Humans Interacting with Computers. *Information Technology and Libraries*, 27(4), 9-16. <https://doi.org/10.6017/ital.v27i4.3237>

[6] Wilson, M. Six views of embodied cognition. *Psychonomic Bulletin & Review* 9, 625–636 (2002). <https://doi.org/10.3758/BF03196322>

THEORIES

CONCEPTUAL METAPHOR THEORY

We explain our complex, everyday realities by communicating in metaphors based on our experiences. A conceptual metaphor is a systematic set of correspondences (mapping) between 2 domains of experience.

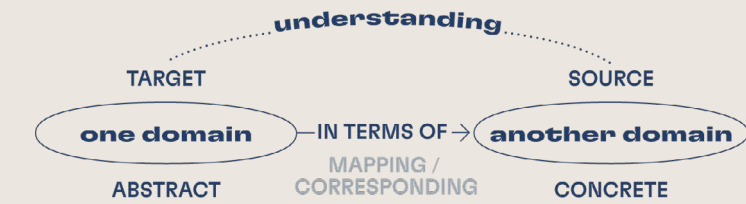


IMAGE SCHEMA THEORY

Through experience, people become familiar with patterns such as up-down, left-right, front-back, containment, balance, center-periphery, and others that recur in our physical bodies and environments.



EMBODIED COGNITION THEORY

Through experience, people become familiar with patterns such as up-down, left-right, front-back, containment, balance, center-periphery, and others that recur in our physical bodies and environments.



RESEARCH QUESTION

03

THE INTELLIGENT
ANALYST

VISUAL EXPLORATION

IN COLLABORATION WITH
PHIL OWEIDA &
EMILY MCGALLIARD

HOW MIGHT THE DESIGN
OF AN INTELLIGENT
KNOWLEDGE GRAPH (KG)
ENABLE AN ANALYST
TO COLLABORATE WITH
THE KG TO UNDERSTAND
RELEVANT DATA AND
FORGE USEFUL INSIGHTS?

BACKGROUND

WHAT IS A KNOWLEDGE GRAPH?

A Knowledge Graph (KG) is essentially a machine-readable concept map that structures data as triplets (subject-predicate-object). KGs are usually extremely large—imagine millions of connected data points. Well known examples of KG's are Google's Infobox located next to search results and Wikipedia.

The Laboratory of Analytic Sciences (LAS) at NC State University asked us to explore how a KG might be useful to an intelligence analyst's job.

USER JOURNEY MAP

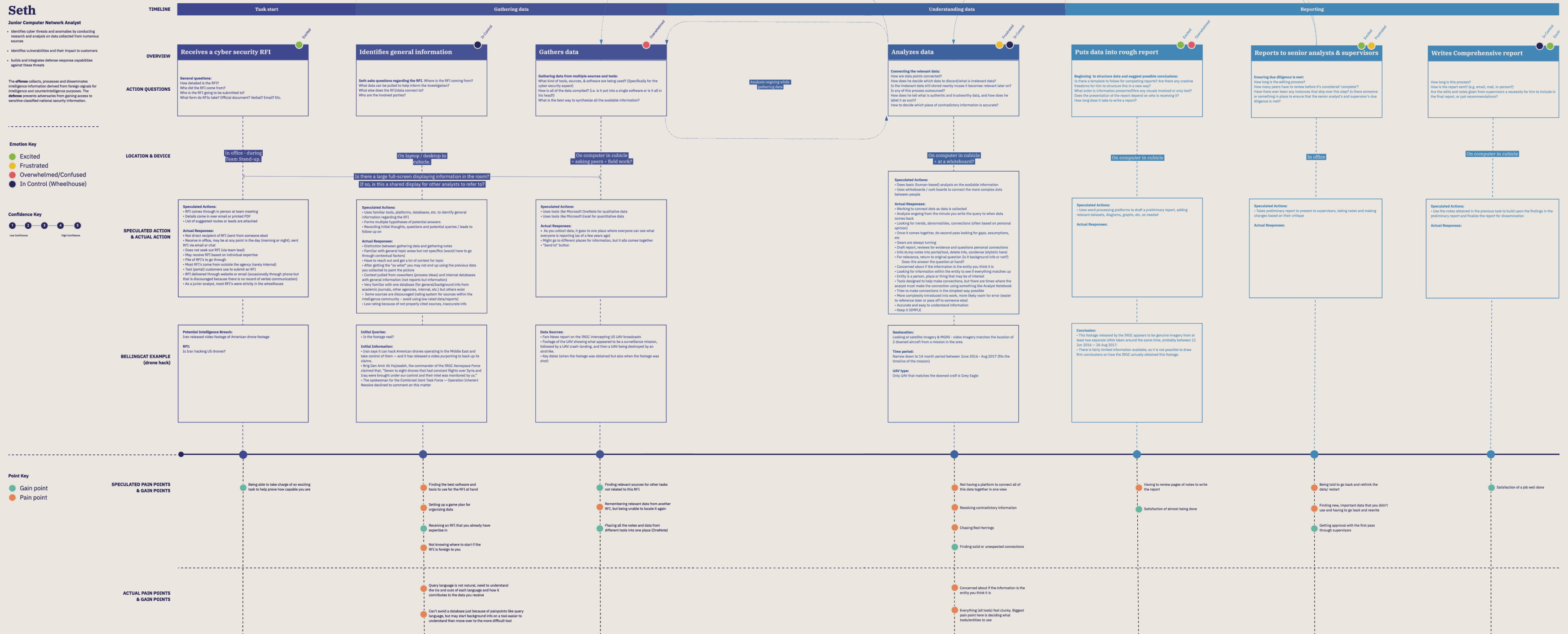
USER PERSONA

Our team was assigned the persona of Seth, the junior analyst. Seth is familiar and adept at technology, but is still learning how it applies to intelligence analysis. The new hires are often the most enthusiastic of the analyst corps. However, this is a double edged sword. Their enthusiasm drives them to devote a tremendous amount of time and

energy to improving their craft (i.e learning the targets, learning the tools, learning the players on the US and partner side). However, this enthusiasm can also cause them to over-pursue red herrings. They're so eager to find actionable intelligence, that they sometimes gloss over their due diligence.

INTELLIGENCE ANALYST TYPICAL DAY

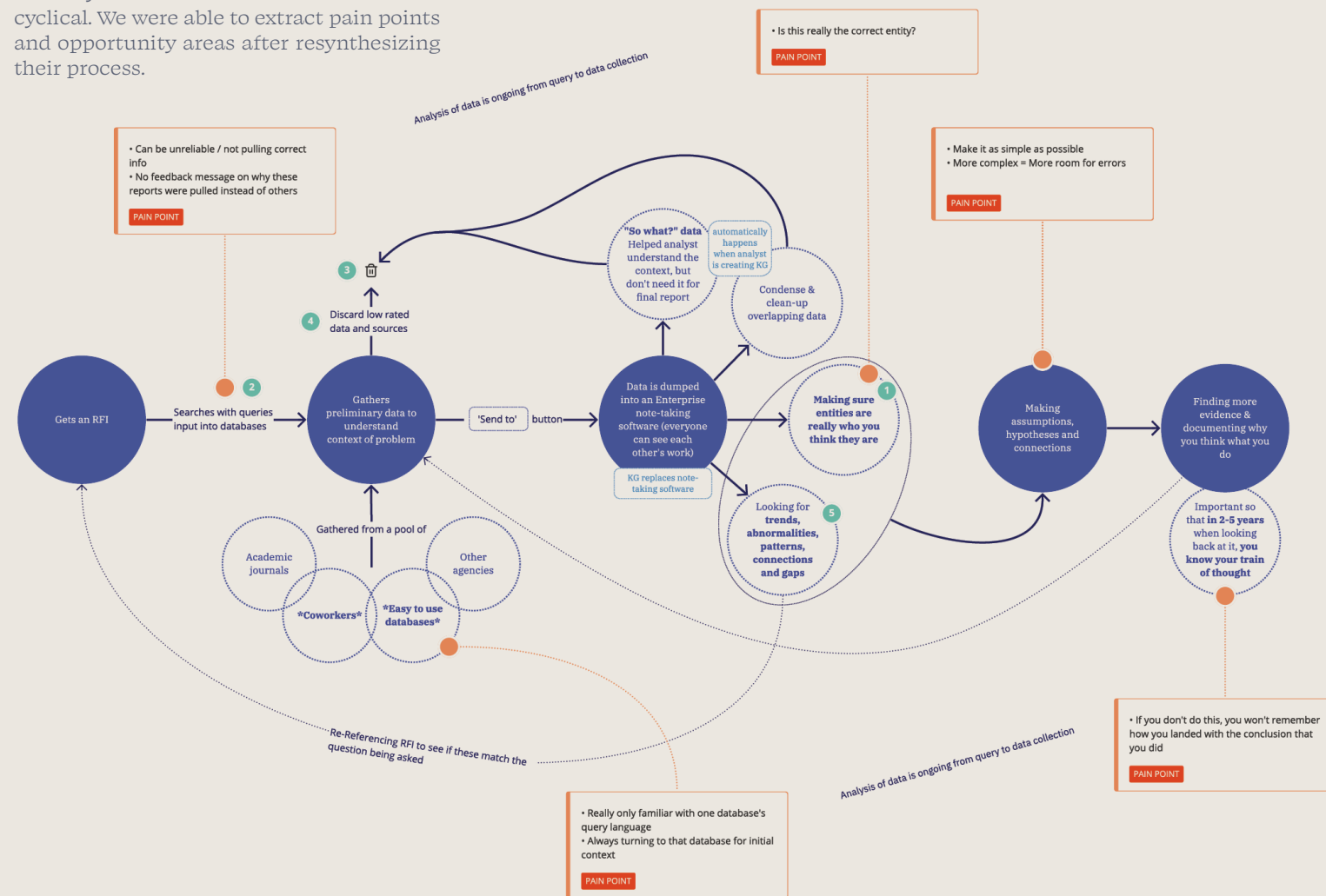
We created a user journey map to document a typical task flow from Seth's day to day activities. This journey map was based on articles and first impressions of what we thought an analysts day would be like. After interviewing real analysts, we were able to make updates.



USER JOURNEY MAP 2.0

USER INTERVIEW

We were able to interview real analysts that fit the Seth persona and walked them through our speculative User Journey Map. Based on their insights, we realized the typical day of an analyst is a lot less linear and a lot more cyclical. We were able to extract pain points and opportunity areas after resynthesizing their process.



PAIN POINTS TO FOCUS ON

SETH'S PAIN POINTS

- + Hard to make connections and form hypotheses between data points
- + Lack of industry knowledge/overall new to the systems and databases
- + Limited screen space/staring at a computer all day (need dark mode)
- + Unfamiliar with best practices of where to go next in the investigation

PROJECT FOCUS

Reliability & viability of sources & databases

PUTTING IT IN CONTEXT (BIG PICTURE)

Opportunity Areas

- Automatically identify issues/problems with data / Is this the correct entity? Tell analyst as soon as possible and with a degree of confidence/certainty
- Recommendation tool for where to search to get the best results (does this need an explanation of "why" for the analyst?)
- Dismissing the irrelevant data (could be automated/recommended) - does it completely remove the data deemed to be irrelevant or just hide it (in case it becomes relevant later & does it store it for later inquiries)
- Rating system of sources (and rating individual pieces of information within the systems)
- Able to view potential patterns / gaps in data / abnormalities

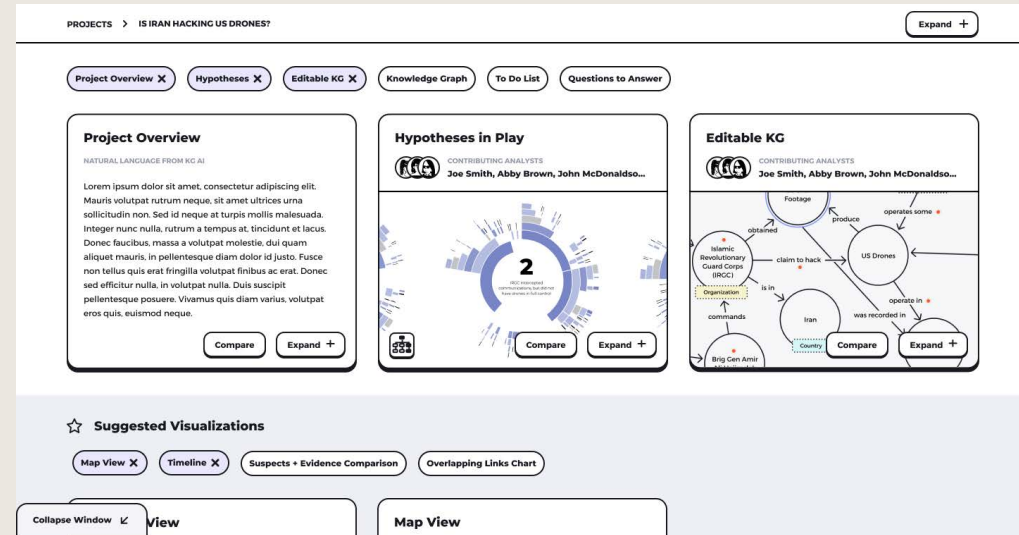
- ML CAPABILITIES QUESTIONS**
- (1) How might the interface establish trust and/or transparency around automated decision making?
 - (1) How might the KG communicate the confidence level of relationships or predictions?
 - (1) How might the user experience evolve over time as the KG gets to know the user or user type?
 - (3) How might the KG filter out data as it grows less relevant?
 - (3) How might the KG infer missing data and make suggestions?
 - (3) How might the human or AI identify patterns in the data and then look for more data that fits those patterns?

- GOALS**
- Communicate the confidence level of sources & AI predictions of potential links
 - Highlight places in the graph where there are gaps, potential links, abnormalities, & patterns
 - Ability to map out/ write out / annotate hypotheses and assumptions based on KG links and references
 - maybe- recommend a database to use to gather more information

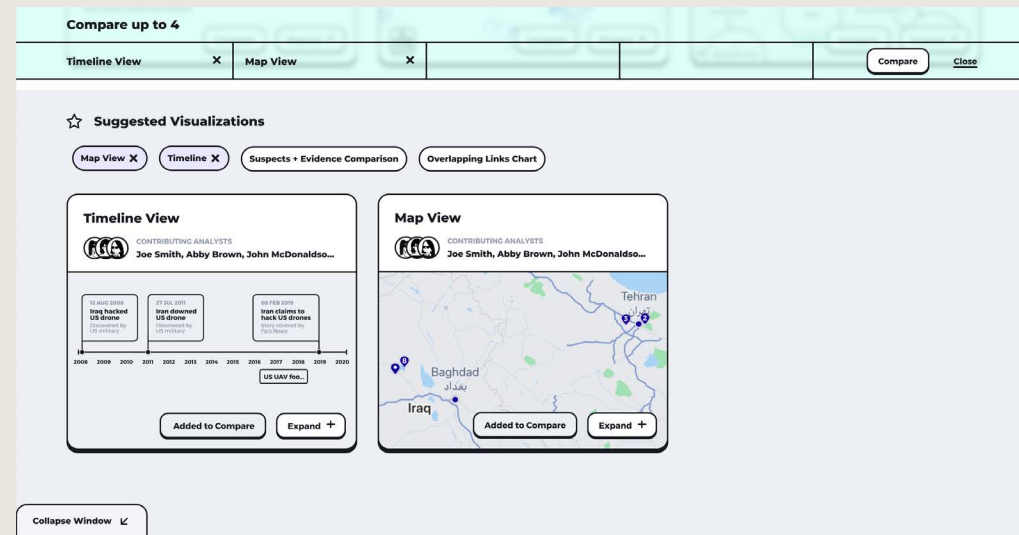
WIREFRAMING IDEAS

SKETCHES AND WIREFRAMES

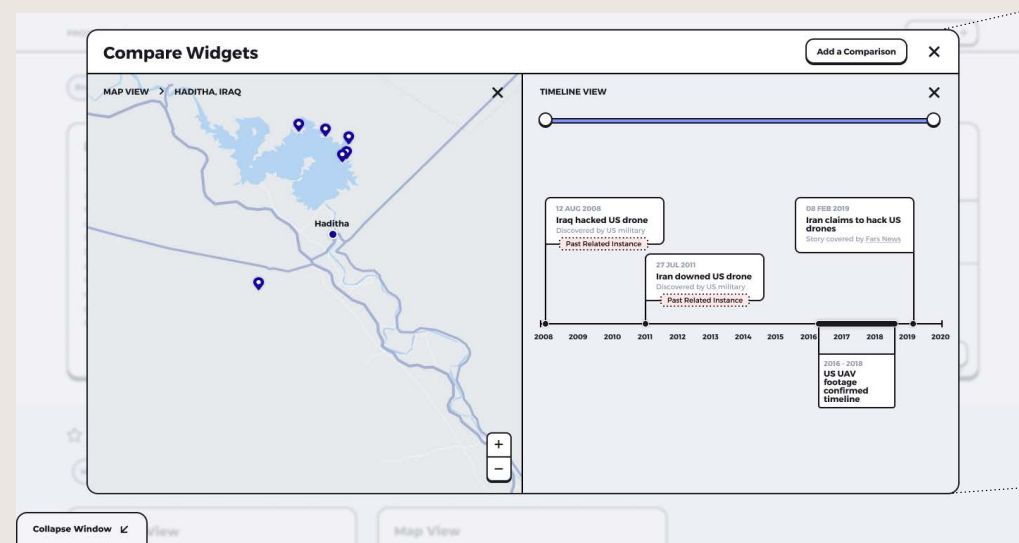
We went through several rounds of sketches and wireframing sessions with the analysts to gather feedback on what was possible, what was implausible, and what might be missing in our designs.



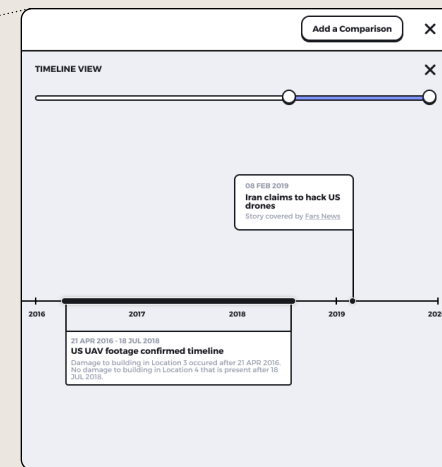
The analyst lands on the dashboard view with modules showing visualizations of the data in the KG. The visualizations are based on the most relevant data inside the KG data according to the AI.



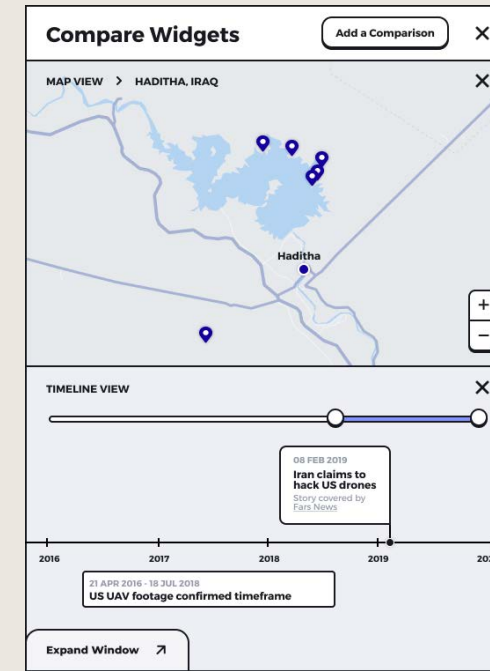
The analyst can either open a single module, or compare modules as shown here. The comparison feature allows modules to link together and updates to one are shown across all.



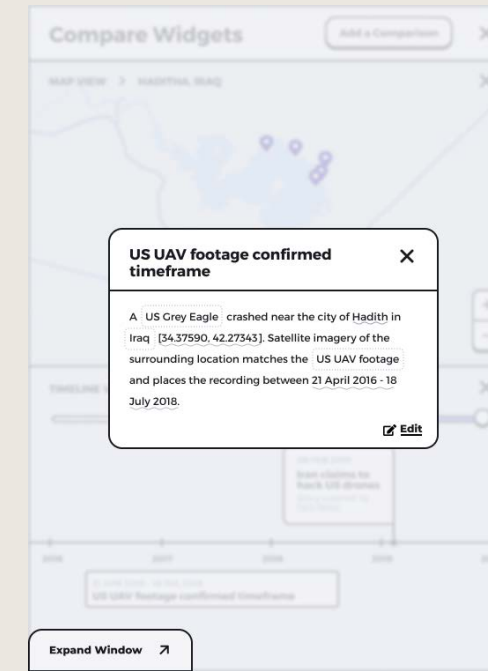
Once the analyst clicks compare, the linked modules open up, overlaying the dashboard. The analyst can interact with the data and make edits, or compare against other open windows.



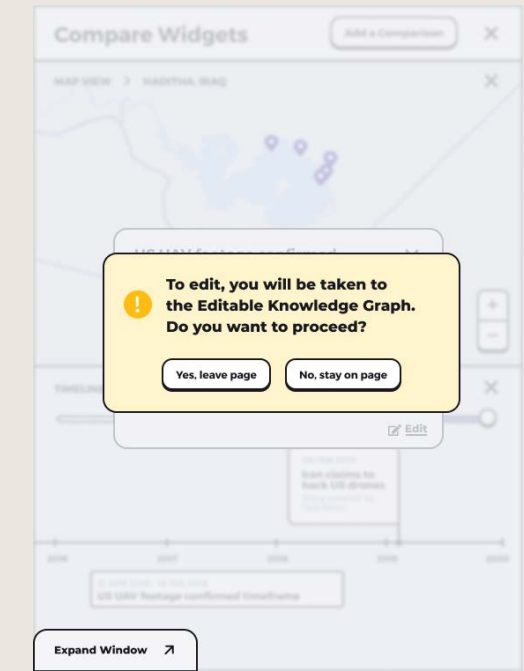
The analyst can select a certain timeframe and the timeline will expand to zoom into that area.



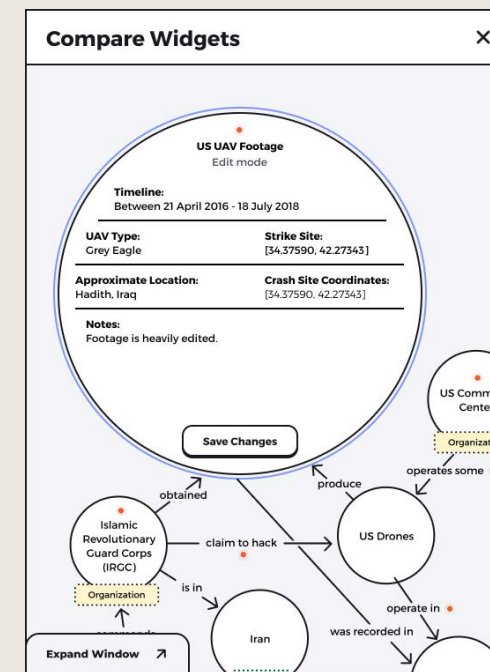
If the analyst clicks 'Collapse Window' the interface will collapse to 1/3 of its original size. This is to allow the analyst more flexibility within the limited screen space.



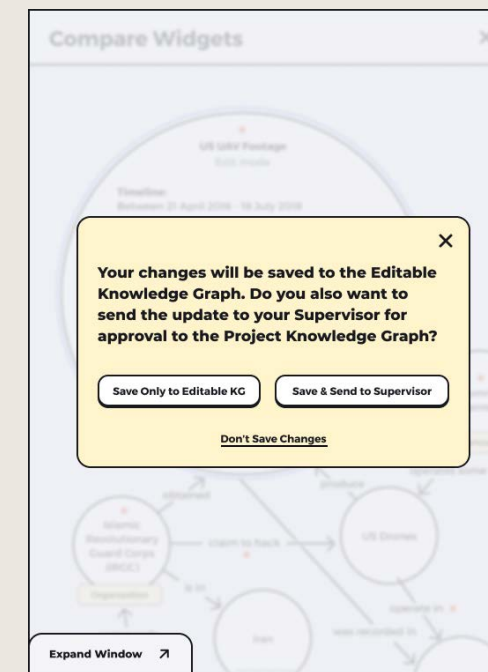
The analyst clicked on the bottom timeline, 'US UAV footage,' which is attached to an entity in the KG. The pop-up shows close relationships within the limited screen space.



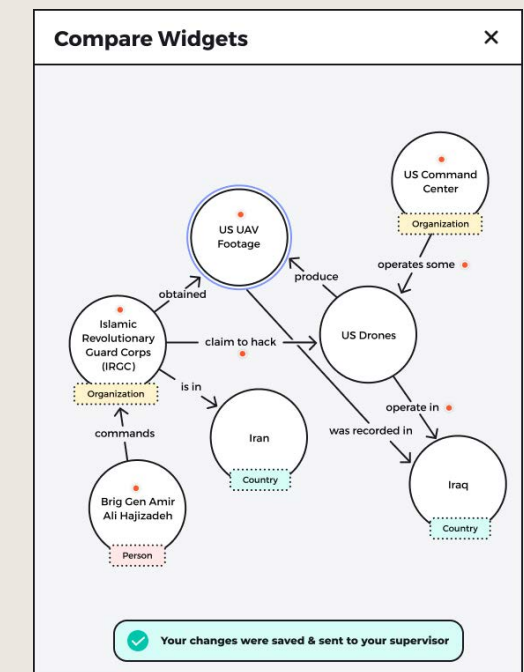
To edit the timeline in question, the analyst must be in the KG view. This limitation was later taken out and edits are allowed inside any module.



The KG opens with the entity expand to view all of the attached metadata. The analyst is updating the timeline and is able to click in the timeline form and edit.



Once the analyst clicks 'Save Changes,' a pop-up comes up to save only to that analyst's personal KG or to save to the master graph. (Pop-ups were also taken out of the next designs.)



If the analyst saves the changes to the master KG, the update will be sent to the Build Master or a supervisor so they don't feel overwhelmed by messing up the KG.

PROTOTYPE

ANIMATED INTERFACE

The end deliverable was presented as an animated scenario video of Seth completing a specific task. Not every feature thought of throughout the semester was present in the video, but most are.

KEY FEATURES

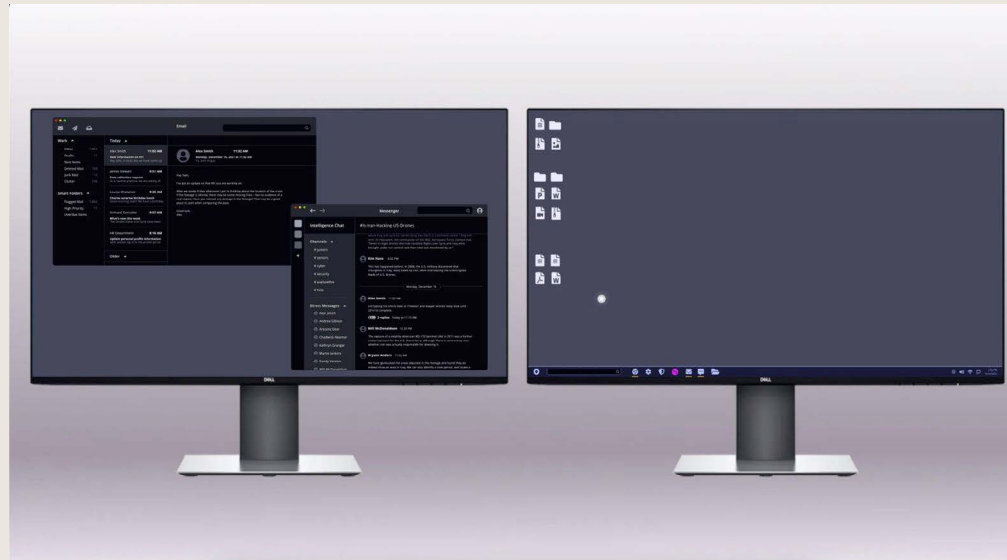
+ A malleable, customizable interface that allows for either a lightweight or heavyweight experience, depending on Seth's workflow.

+ Intelligent Assistant to recommend next steps to Seth if he isn't sure where to go next. The AI can be turned off at any point.

+ Modules that link together, allowing updates made in one to be shown across all linked modules.

+ Visualization Recommendation feature is powered by the AI and based on the KG data. It's all about getting the most useful visualizations at the most appropriate times during an RFI investigation.

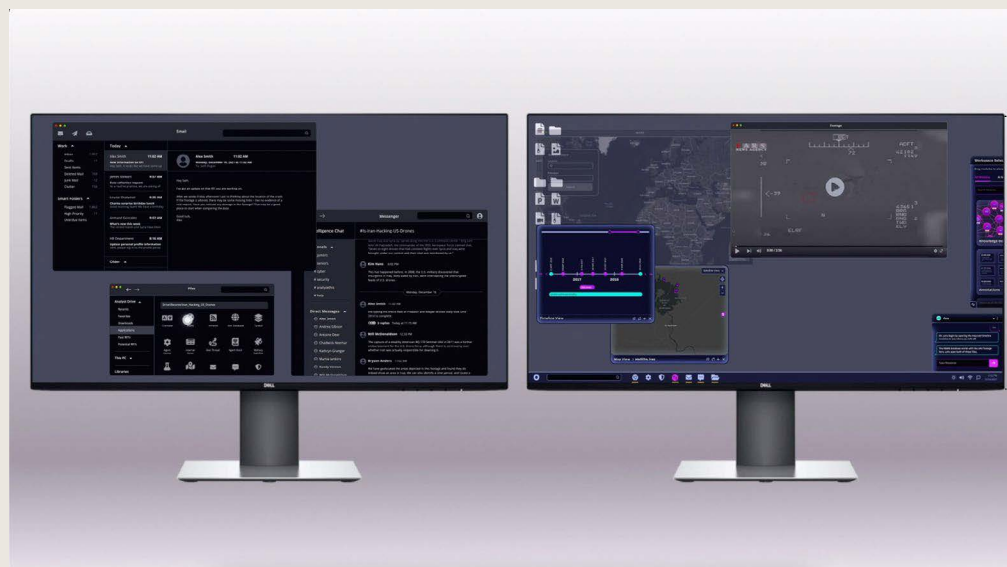
+ The KG has a version control feature that allows Seth to pull down a personal branch from the Master Graph to make edits to, and he's able to revert to past versions if he makes a mistake.



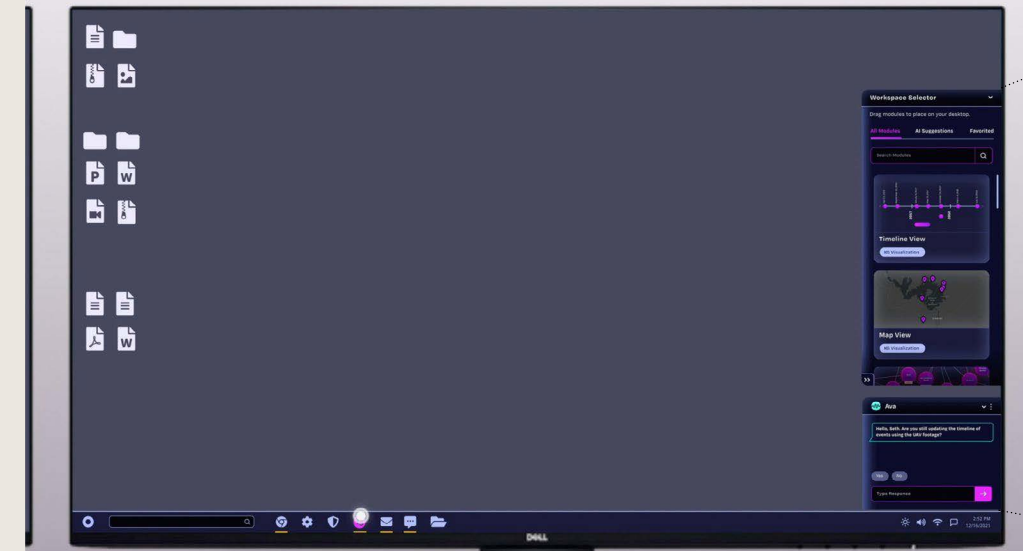
The animation opens up showing both of Seth's monitors with applications already open (his email and messenger)



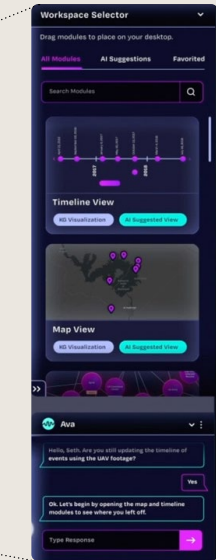
The modules automatically link together when dragged onto the desktop. When the mouse hovers over a particular timeline event, the location attached to that same entity is highlighted.



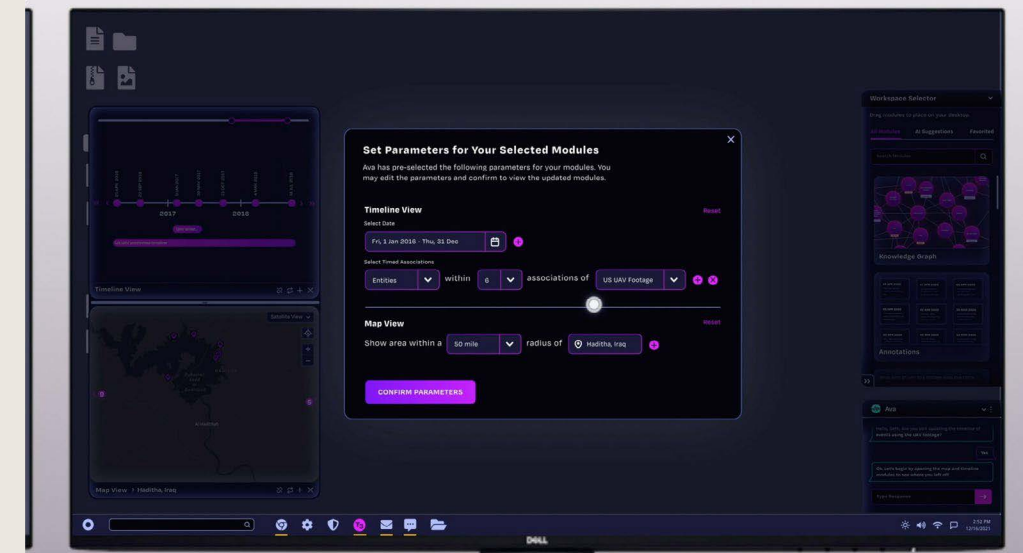
Ava highlighted the timeline Seth was trying to update and suggested he open up the MGRS and footage to compare against his data. The AI automatically optimizes the screen space for Seth.



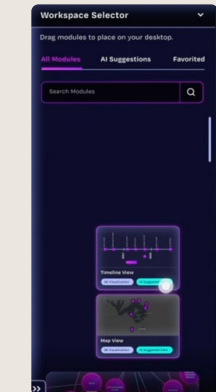
Seth opens the application, which pulls up Ava, the intelligent assistant, and the Workspace Selector, which is the home of all of the modules.



Ava asks Seth if he's still working on the same task -- updating a timeline -- and suggests he opens the map and timeline modules by giving those modules a green tag.

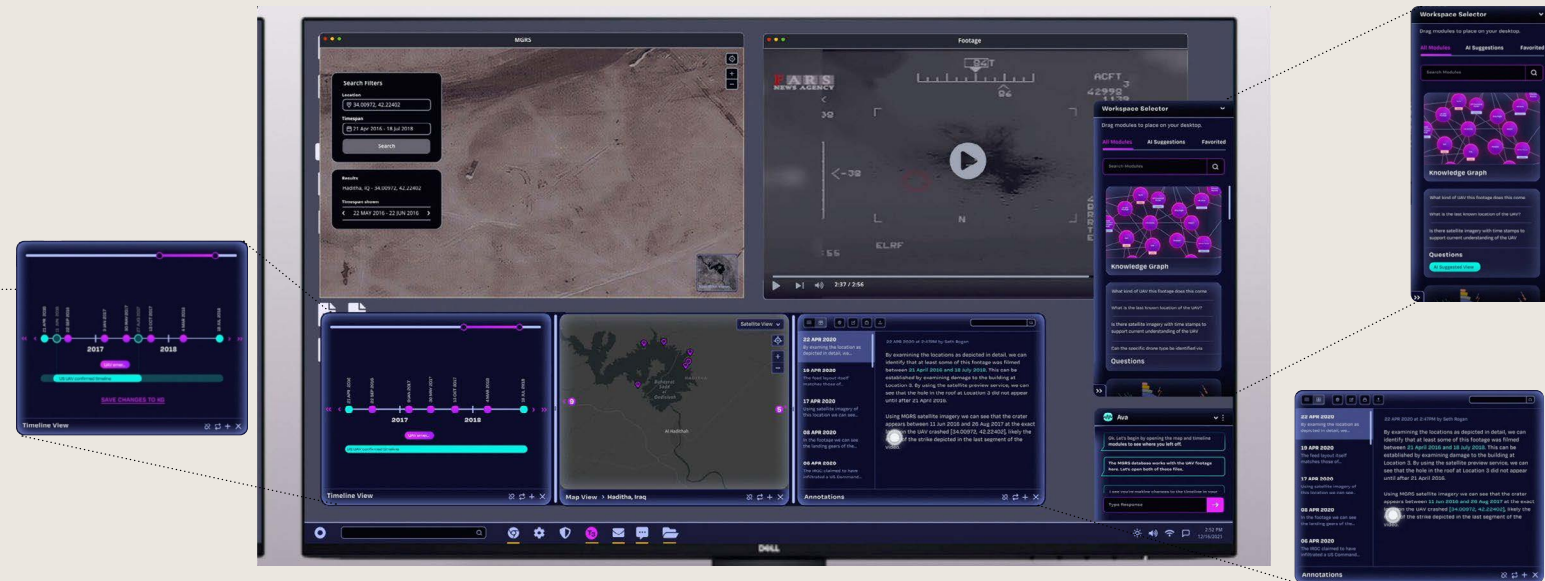


When a new module is opened, a pop-up to set parameters opens. Ava suggests using the past parameters set by Seth and Seth clicks 'Confirm Parameters.'

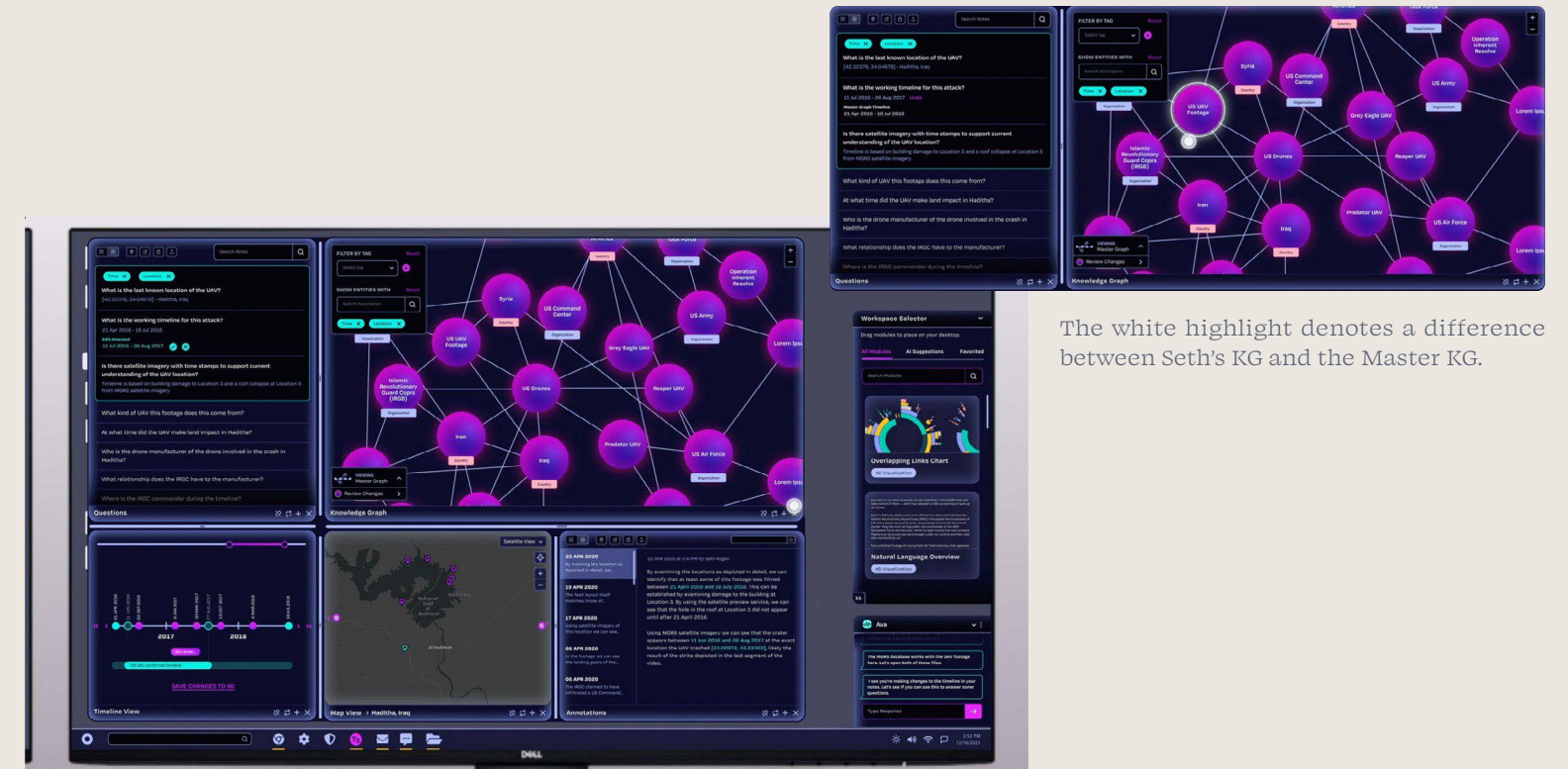


Seth selects his modules and drags them onto his desktop to open.



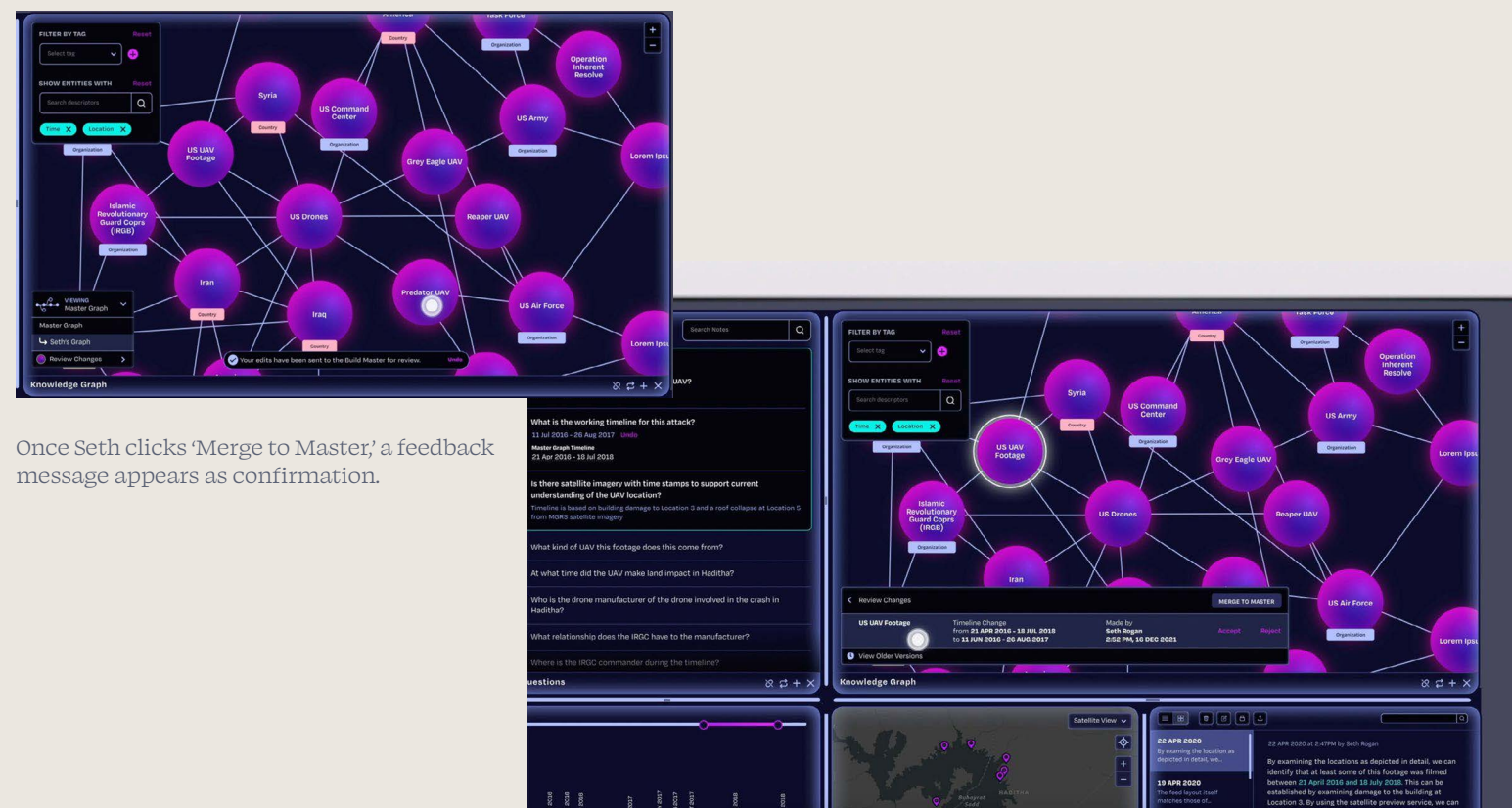


Seth found a crater in the footage and cross referenced it with the MGRS to find a time stamp. With this new timeline of events, he opens the Annotations module to jot down his note of his new timeline. Ava recognizes the change Seth is making, highlights it green, updates the timeline view to match, and suggests he open the Questions module to check for contradictions before updating the KG.



The white highlight denotes a difference between Seth's KG and the Master KG.

Ava has automatically filtered the Questions and KG module by time and location since that's the primary data Seth is working with. Seth doesn't find any contradictions with his new timeline, and clicks the check mark in the Questions modules to update his branch of KG.



Once Seth clicks 'Merge to Master,' a feedback message appears as confirmation.

When Seth feels confident with his changes, he can click 'Review Changes' and a summary of his changes will appear with an option to either accept or reject. If he accepts them, he can then merge it to the Master which will send the update to the Build Master. If he uploads a mistake, he can revert back to older versions of the KG. This makes Seth feel more confident with his additions.



Seth can toggle between his graph and the Master Graph to see the changes he's made.

RESEARCH QUESTION

04

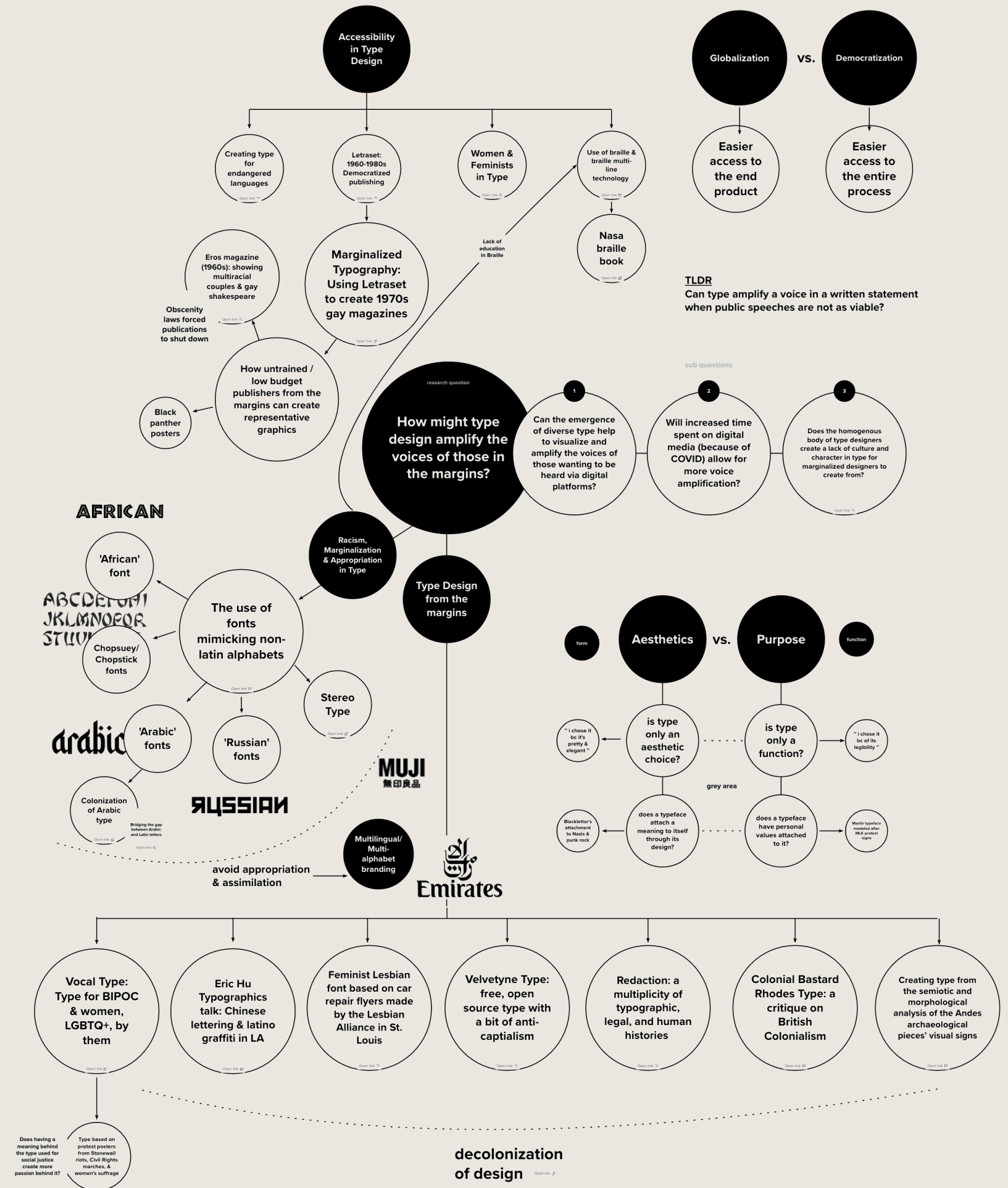
COMMUNITY TYPE DESIGN

VISUAL EXPLORATION

HOW MIGHT TYPE DESIGN AMPLIFY THE VOICES OF THOSE IN THE MARGINS?

The field of type design is made up of mostly white men with Euro-centric type education. On top of that, there are only a handful of type design educational programs & institutes globally. The lack of access to type education makes it difficult for marginalized designers to become proficient in type design. With the combination of a lack of educational resources for type design & a lack of accessibility within the design community at large, the type design community is very homogeneous & lacks culture, relatability & overall development. How can we democratize the accessibility of type design in a way that allows for the amplification of anyone's voice?

Type is so saturated in our lives that we don't consider its implications beyond style, legibility, and readability.



WHAT COULD A "THING" THAT ADDRESSES THE PROBLEM AREA BE?

MINISTABS

1. Educational Tool

A tool that explains & documents oppressed type, racist type, colonized type, & problematic type/ type designers. 15 idea is a plugin that identifies type on a web page & alerts you if it's considered problematic.

2. Directory

A tool that showcases type made by those who are marginalized to be used by the marginalized. The directory would allow users to filter based on the categories/communities they identify with.

3. Type Generator

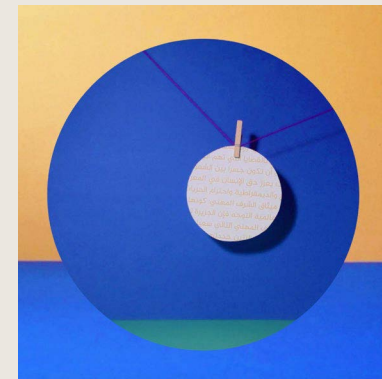
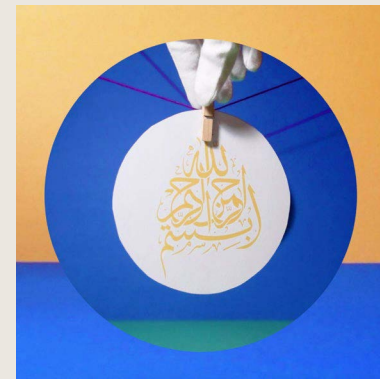
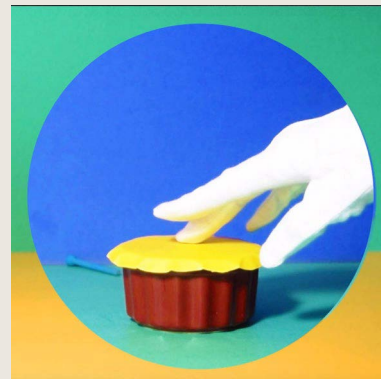
A tool to that documents protest sign lettering from social media photos. It uses AI to trace & create full typefaces based on the signs to be used for social justice purposes for more personal storytelling.

4. Convert audio to Typographic Posts

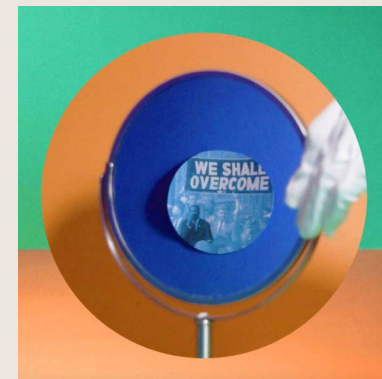
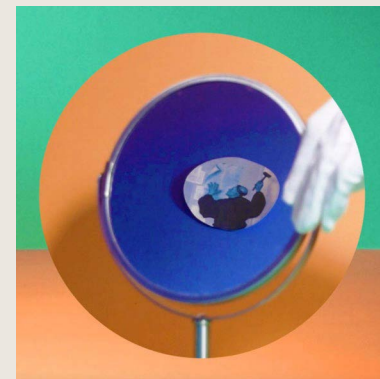
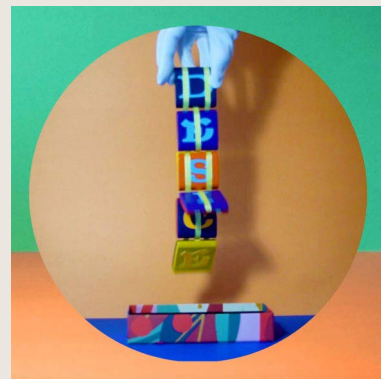
A tool that automatically turns audio or closed captioning from videos into short typographic assets for all social media. It works as an easy secondary form of spreading a message across multiple platforms.

VIDEO TO CAPTURE THINKING

Type is a building block the cornerstone of design. It's seen & used by everyone But...the field of type design is made up of mostly white men. Does this homogeneous body of type designers create a lack of culture & character in type for designers of different backgrounds to create from? Yeah Probably



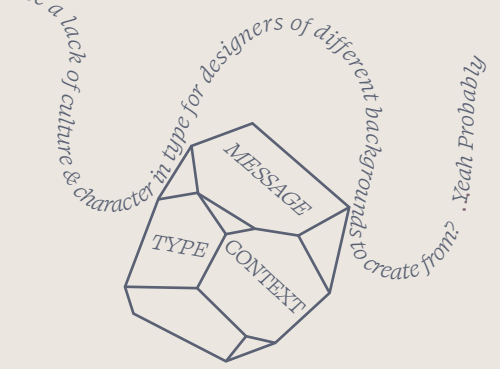
On top of that, the West is notorious for colonizing type like when they changed Arabic letters to be more like the stand alone letters seen in the Roman alphabet



People have been using type to get out their messages since forever & they've been doing it in creative ways: from one Martin Luther to another. What if



you could translate and capture voices, mediums, & culture into a typeface design? How can we reimagine the way we think about type & type design?



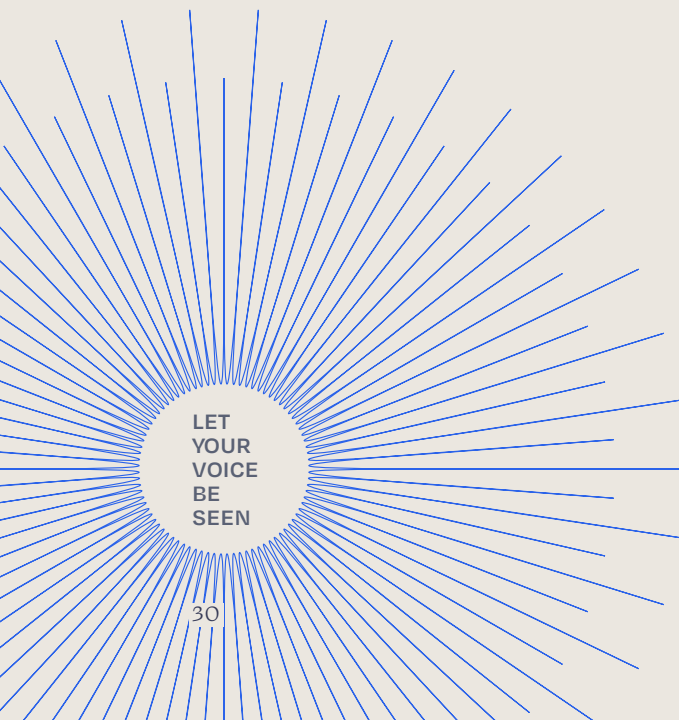
A CALL FOR DESIGNERS TO PURSUE AND SUPPORT COMMUNITY TYPE DESIGN

DEMOCRATIZE TYPE DESIGN EDUCATION

A call for type design education to become accessible to all designers. Type design has numerous marginalized facets to its creation & its accessibility. Instead of type design being in the hands of a few, let's allow anyone interested in type design to learn and develop their type skills so that the type community will become more diverse, more inclusive &, hopefully, more decolonized.

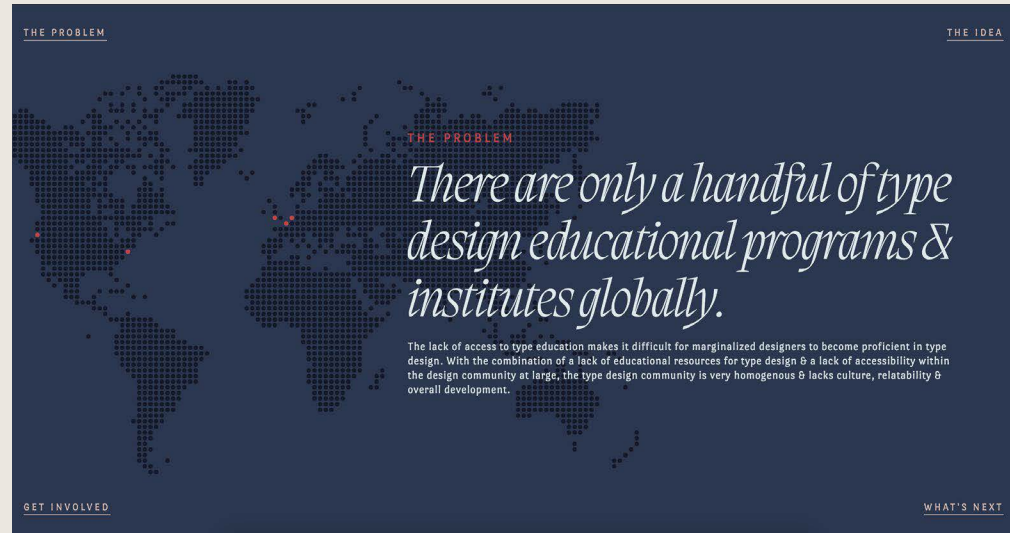
COMMUNITY BASED TYPE DESIGN

A call for type designers to gain support through their communities. Type is used by everyone, but created by so few. Let's support our fellow type designers, both within the geographical community and within the personal communities we identify with. By doing this, we're encouraging designers to create type with culture & character that reflects their life experiences. Where would type be at today if a more diverse body of designers were contributing?





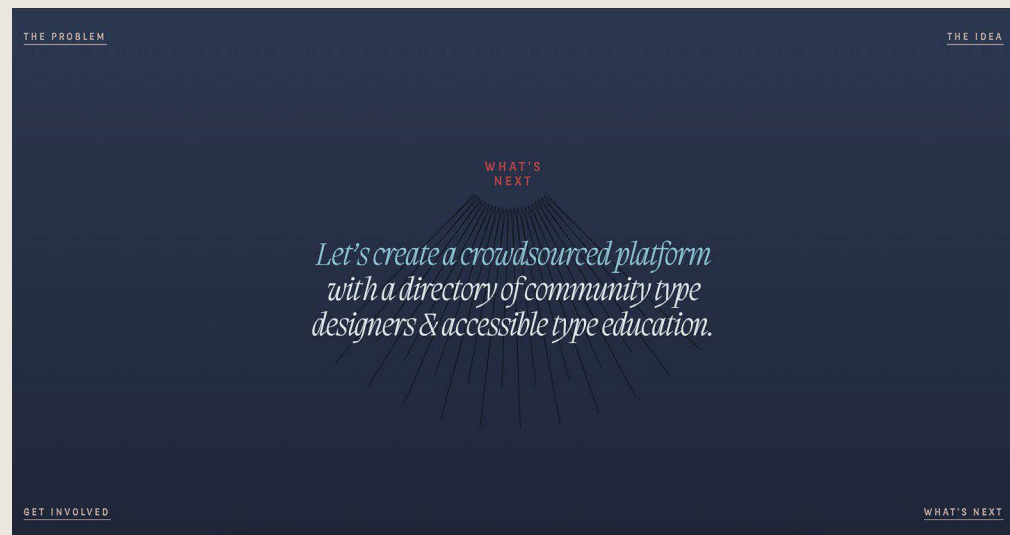
What this website is



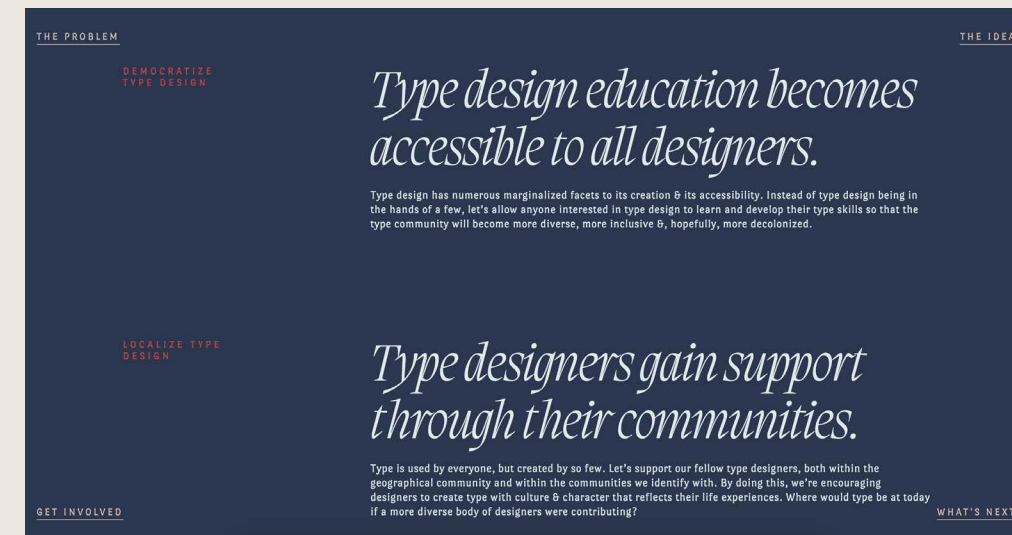
Reasons why this problem area needs to be addressed, & what makes it a problem



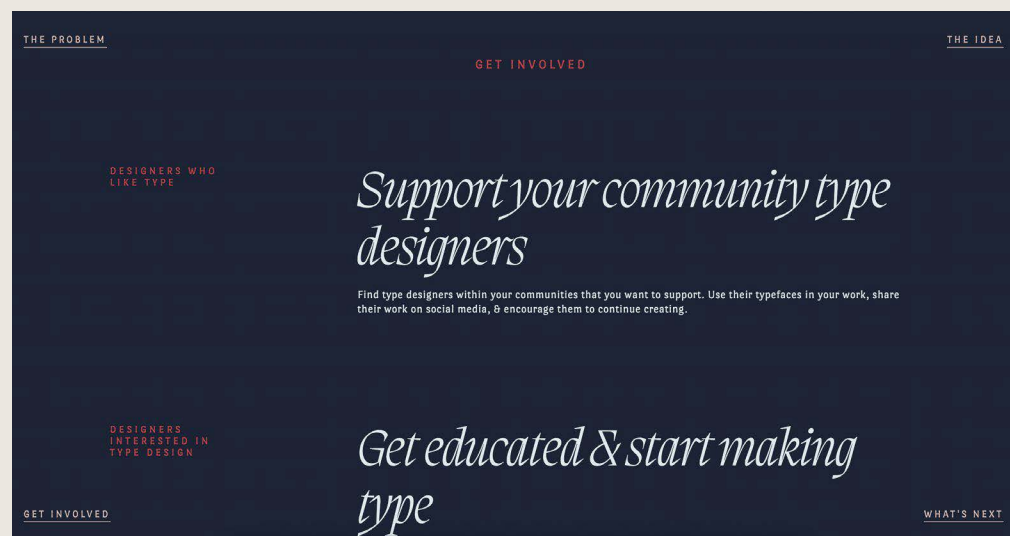
How this site seeks to bridge the problem



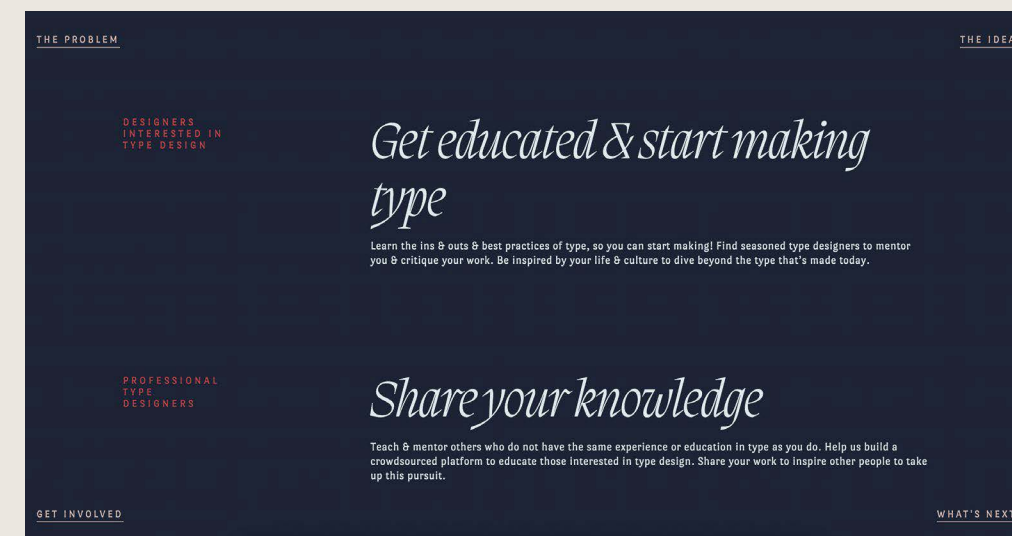
A more grounded way that designers could help in the process



Ways that this bridging of the problem could be tackled



Specific ways designers can contribute to the proposed solution



+ More ways designers can help accomplish that solution



A form to join & ways to stay up to date

CTA SITE
www.avcook.co/type-CTA

RESEARCH QUESTION

05

POLITICAL DARK PATTERNS

RESEARCH PROPOSAL

HOW ARE USER INTERFACE ELEMENTS THAT EXPLOIT COGNITIVE BIASES AND DARK PATTERNS USED ON WEBSITES, MOBILE APPS AND EMAILS CREATED BY INFLUENTIAL POLITICAL PLATFORMS?

LITERATURE REVIEW MAP



THE USE OF DARK PATTERNS AND COGNITIVE BIAS IN INFLUENTIAL POLITICAL CAMPAIGNS' DIGITAL PLATFORMS - RESEARCH PROPOSAL

STUDY PURPOSE

The manipulation of voters from official electoral campaigns, special interest lobbies, foreign state actors, and domestic dark money groups has been researched primarily from the angles of political advertising strategies, the spread of fake news, search engine manipulations, micro-targeting, and neuromarketing. There has been limited research conducted on the use and affect of dark patterns on voters through the user interface (UI) design of web, email, mobile apps and other platforms by influential political platforms. For this study, dark patterns are being defined as maliciously crafted UI interactions that adversely influence users and their decision making abilities, and influential political platforms will be an umbrella term to refer to official electoral campaigns, PACs, Super PACs, Hill Committees, and other official party organizations.

Dark patterns use misleading content and visual design to create experiences that are beneficial to the website owner and harmful to the user. When dark patterns are combined with cognitive biases, users can be subjected to manipulative tactics that they may not be aware of. Political campaigns, along with third party agencies, use data-driven marketing to target voters. The combination of user data from online platforms and voter files enable the creation of micro-targeted messages to specific audiences. This research proposal aims to find these dark patterns across influential political platforms, create a taxonomy of the different types, and conduct user testing on the findings across particularly vulnerable voter populations to understand the impact and user awareness of these patterns.

RELEVANT LITERATURE

Previous studies found 11% of 11,000 retail sites feature at least one dark pattern and, on average, 7.4 dark patterns per randomly selected app (Mathur et al. 2019; De Geronimo et al. 2020). More users will inherently interact with dark patterns as these patterns become increasingly common across all categories of digital platforms, however, previous work

suggests users are generally not aware of and cannot detect dark patterns presented before them (De Geronimo et al., 2020). This lack of education on dark patterns puts users at a higher risk of manipulation. For example, in 2014 the National Republican Congressional Committee (NRCC) created websites that were deceptively designed to look as if they were in favor of democratic candidates, when, in fact, the donations from the site were funding the NRCC (Goldmacher, 2014).

Privacy dark patterns and strategies “intentionally manipulate people to provide their personal data for collection, storage, and processing against their original intent and interest (Bösch et al. 2016, p. 252).” Some platforms hide or prohibit access to sections, unless the user inputs data, a common strategy to coerce someone to give away information. For example, if a user wanted access to a political app, the interface may require he or she provide personal information such as an email, name, phone number and access to his or her contact list to create an account and log in. Once a platform has access to this data, it can use this information to recognize the user across different platforms through cross-device targeting.

Many dark patterns take advantage of a user's cognitive biases, including privacy dark patterns (Waldman, 2020). For example, the Biden for President website positively frames its privacy policy by using the heading “Your Privacy Rights,” while listing all of the ways that their platform gathers, uses, and shares data with third-party groups. This example shows the illusion of a user's right to control his or her data but, in fact, the user does not have control over the data being collected or shared (Biden for President, 2020). When users believe they have control over their data, they are more likely to give that data away.

Another route for creating highly targeted marketing is through the use of psychographic targeting and neuromarketing. Psychographic targeting and neuromarketing, combined with detailed user data and voter files, creates a direct line to manipulating a user's cognitive biases (Crain and Nadler, 2019). An infamous

example of this practice in politics is the “five factor personality model” used by Cambridge Analytica for Donald Trump's 2016 campaign to target audience segments labeled as “persuadable” (Chester and Montgomery, 2017).

STUDY PROPOSAL

Research Question

How are dark patterns and user interface elements that exploit cognitive biases used on websites, mobile apps and emails created by influential political platforms, and how do voters respond to these patterns when navigating the platforms?

Participants

Participant demographics will be roughly proportionate to the website, mobile app and email user demographics, in order to see which of these audiences is the most vulnerable to dark patterns. Only eligible voters will be considered. For each category of demographics—age, race, and gender—there will be at least 5 users for user testing as advised by Jakob Nielsen, a user research and web usability consultant (Nielsen Norman Group). User demographics can overlap across these categories to avoid an infeasible amount of required participants.

Methods & Plan

Websites, mobile apps and emails created by influential political platforms for major election campaigns must be found that contain dark patterns and deceptive elements. Once this information is gathered, the findings will be categorized by the dark patterns being used. This step will take a few weeks of thorough searching and is an important first step that will inform the following steps. Next, surveys will be sent out to eligible voters of the candidates that have deceptive platforms. Voter's contact information for the surveys will be taken from publicly available voter files. The survey data, potentially in conjunction with web analytics, will inform which demographics are the most likely to use the platforms from the first step. Unmoderated,

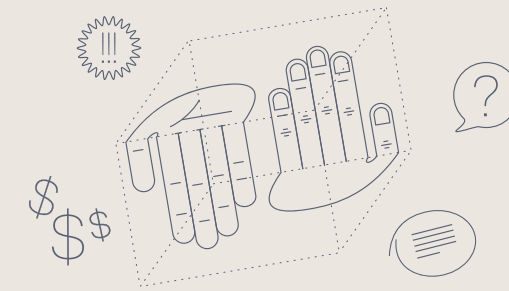
remotely recorded user testing will be conducted, with the demographic data from the surveys informing the types of users to be recruited. After the user testing, user interviews will be conducted to gauge the users' awareness and responses to the dark patterns that were presented to them. This study will be very timely and might require expedited research to capture the findings during the active campaigning stage, as campaign websites often change after the elections.

Data

Publicly available voter files will be requested from the politicians' states where dark patterns are found. This data will only be used as contact information to gather survey participants. The data gathered from the survey will be used to show the demographic percentages, such as age, race and gender, of eligible voters that are most likely to use the selected user interfaces. The survey data will be anonymous and will not ask for personal identifiers beyond general demographic information. Participants will be screened with a questionnaire before user testing. This information, along with the rest of the data gathered through user testing and user interviews, will be de-identified to the public. All data will be stored electronically behind password protected folders, unless the requested voter files are delivered in paper form, in which case, the files will be stored in a locked cabinet and shredded after the minimum amount of time from project completion. All data will be de-identified if presented to the public.

Resources

Most state voter files are available to the public for free, but some require payment. The survey data would be more complete in conjunction with web analytics on specific demographic data points like age, gender, and IP addresses to estimate geographic location. Free, public web analytics usually only cover overall visitor count and not specific target groups. Access to a remote user testing platform, which usually requires a payment, along with very specific and time-sensitive user testing and user interview participants will be needed.



REFERENCES

- [1] Mathur, A., Acar, G., Friedman, M., Lucherini, E., Mayer, J., Chetty, M., & Narayanan, A. (2019). Dark Patterns at Scale. Proceedings of the ACM on Human-Computer Interaction, 3(CSCW), 1-32. doi:10.1145/3359183
- [2] De Geronimo, L., Braz, L., Fregnan, E., Palomba, F., & Bacchelli, A. (2020). UI Dark Patterns and Where to Find Them: A Study on Mobile Applications and User Perception. CHI '20: Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, , 1-14. doi: 10.1145/3313831.3376600
- [3] Goldmacher, S. (2014, March 13). Fake Websites Created by Republicans Spur Ethics Complaint. National Journal Daily AM, 7.
- [4] Bösch, C., Erb, B., Kargl, F., Kopp, H., & Pfattheicher, S. (2016). Tales from the Dark Side: Privacy Dark Strategies and Privacy Dark Patterns. Proceedings on Privacy Enhancing Technologies, 2016(4), 237-254. doi: 10.1515/popets-2016-0038
- [5] Waldman, A. E. (2020). Cognitive biases, dark patterns, and the 'privacy paradox'. Current Opinion in Psychology, 31, 105-109. doi: 10.1016/j.copsyc.2019.08.025
- [6] Biden for President. (2020, July 1). Privacy Policy (Your Privacy Rights). Retrieved November 18, 2020, from <https://joebiden.com/privacy-policy/>
- [7] Crain, M., & Nadler, A. (2019). Political Manipulation and Internet Advertising Infrastructure. Journal of Information Policy (University Park, Pa.), 9, 370-409. doi: 10.5325/jinfolpoli.9.2019.0370
- [8] Chester, J., & Montgomery, K. G. (2017). The role of digital marketing in political campaigns. Internet Policy Review, 6(4), 1-20. doi: 10.14763/2017.4.773
- [9] Nielsen Norman Group. (2000, March 18). Why You Only Need to Test with 5 Users. Retrieved November 23, 2020, from <https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/>
- [10] Epstein, R., & Robertson, R. E. (2015). The search engine manipulation effect (SEME) and its possible impact on the outcomes of elections. Proceedings of the National Academy of Sciences - PNAS, 112(33), E4512-E4521. doi: 10.1073/pnas.1419828112
- [11] Kayhan, V. (2015). Confirmation Bias: Roles of Search Engines and Search Contexts. Thirty Sixth International Conference on Information Systems, Fort Worth, 1-18. <https://pdfs.semanticscholar.org/2b04/1eb44fd8031596ed8e73124801c5bcf550b1.pdf>
- [12] Forbrukerrådet. (2018). Deceived by Design: How Tech Companies Use Dark Patterns to Discourage Us from Exercising Our Rights to Privacy. <https://fil.forbrukerradet.no/wp-content/uploads/2018/06/2018-06-27-deceived-by-design-final.pdf>.
- [13] Benartzi, S., Beshears, J., Milkman, K. L., Sunstein, C. R., Thaler, R. H., Shankar, M., Tucker-Ray, W., Congdon, W. J., & Galing, S. (2017). Should Governments Invest More in Nudging? Psychological Science, 28(8), 1041-1055. doi:10.1177/0956797617702501
- [14] Bradshaw, S. & Howard, P. N. (2018). Challenging Truth and Trust: A Global Inventory of Organized Social Media Manipulation. Working Paper. Oxford, UK: Project on Computational Propaganda. compromp.oii.ox.ac.uk.

THE END

UNTIL NEXT FALL