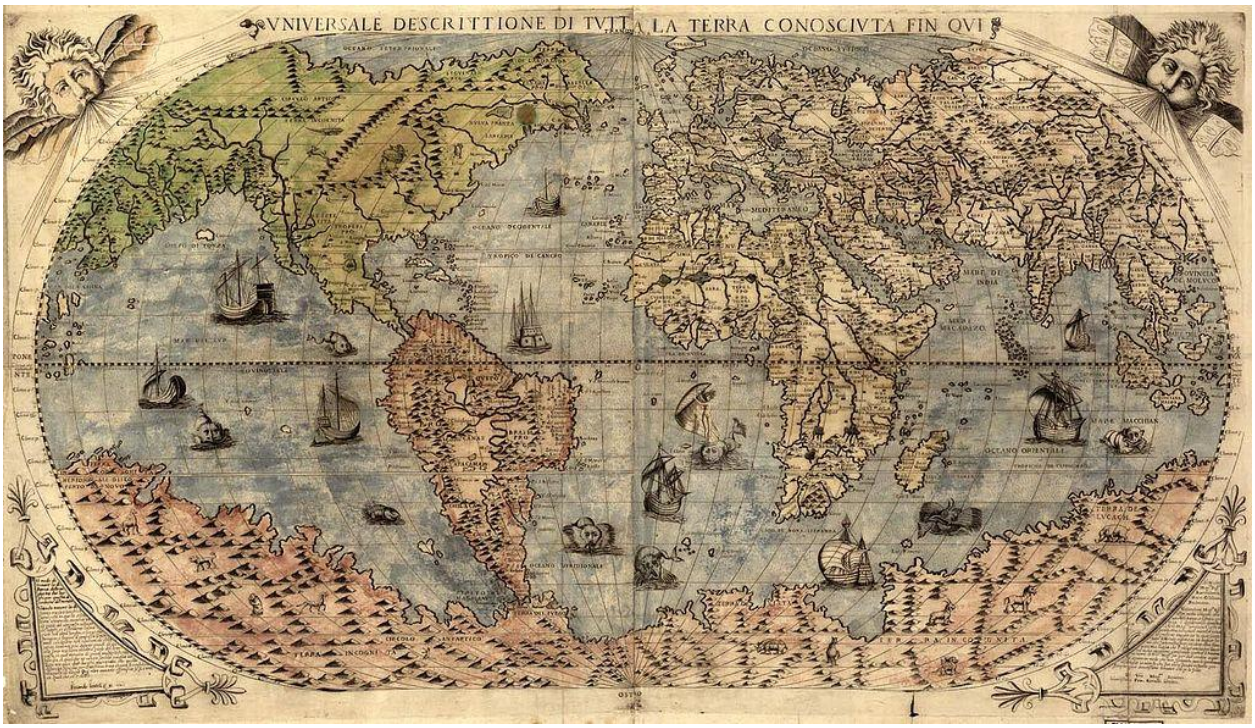
Influences of Renowned Artists

Process Book

Nick Lord-Ender-Laing, Nishita Kharche, & Eisen Montalvo

Insert a representative image or even style the page in a good way



We could kick around an aesthetic like this, similar to the 2012 example process book, to get across our emphasis on both history and world-wide influences

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Overview & Motivation

For now, this section is a combination of the relevant content we wrote in our proposal. Considering that the people who read this will not have all read our proposal, I think keeping a lot of the same substance will be good. *This section will see some big changes though* The motivation for this project stems from our interest in art which made us decide on this topic. Over the years while looking at artworks and getting to know about different artists, we noticed that there is no one place that has all the data in a collection being showcased on a visual platform. Almost all of the data is in text form and is usually centered around either artwork or an artist. There is no platform that showcases this data in a visual manner that can help infer various things like which artist came first, whose works inspired which artists, how art inspirations traveled across continents, and how the artists traveled during their life. To get this data we need to go through many books, museums, and websites including wiki pages, and articles from various regions.

(Pasted project objectives from proposal. *Will properly retool*) Our visualization should be able to show information about various artists, including where and how they spent their lives, what kind of art they worked on, and their famous noted artworks. Our main objective is to show how the artworks of one artist influenced the others' artworks. They may not always be from the same medium but it is fascinating to see that the art styles have still been influenced by others over time. We intend to have a visual platform showcasing artists, their artworks, the artists who influenced them, and the artists who were influenced by their artworks. The interactivity we want to provide should help customize the details one wants to see. Some of the questions we would like to get answered are: which notable artists across the globe influenced others in different places, which era had the most influential artists, what the lives of these artists were like, and what their notable works were. Meanwhile, some of the benefits of our visualization are: all the required data about our artists can be found in one place in a digestible way, we can look at the overall density of artists in the world and tell where art flourished the most in our set, and we would have a visually pleasing museum-like explorable compendium of famous artists.

(Pasted Must haves from project proposal. *Will properly retool*): Firstly, a world map is essential. Part of the joy of learning about art is imagining yourself in the place where its artist created it, and because of the global scope of our data, we think a world map view is a great way to contextualize each artist. Another key component is a timeline. We want to emphasize what we are showing (geographically and temporally) because it is an easy way to establish more context. The timeline must function as a filter for the map as well. Also, the influence map is perhaps the most invaluable part of our design. To convey who influenced whom among our data set, we want to use arrows between artists in our data. Finally, we need to display succinct but interesting information about an artist when the user wants to. This part would heavily rely on text, but this should not be an issue given our educational tone. How the user influences these components, and how they fit together should largely match our final prototype sketch. Although we imagine that minor changes are to be expected.

(Pasted optional goals from project proposal. *Will properly retool*): There are only a handful of stretch goals. Firstly, it would be nice to have a histogram-like line above our timeline like the one in our second prototype sketch (see fig. 2). This indicates how many artists were alive across time, and gives the user a preview of interesting eras to explore. The second optional feature would be a custom world map. Initially, we may rely on the world map path that this course provided for us on a previous assignment, but we want to make a more stylized map ourselves. We think we can accomplish this using Adobe Illustrator, but we have not yet worked out all of the intricacies of that. We also contemplate a translation feature for the artist markers on our map view that remains in sync with the dynamic timeline's selected year. This requires some extra data corresponding to where the artists were for key spans of their lives, but the feature itself would be trivial. Similarly, we may implement some type of visual representation of where each art piece resided over time.

Related Work

Initial Inspirations

During our initial planning phase, our foremost inspiration for this project as a whole is our general interest in the history of artists and how they relate to each other via inspirations. We discussed how this would lend itself naturally to a type of network visualization (in relation to our latter interest) that could rely on a world map in order to ground it. More specifically, the books, *Art: The Definitive Visual Guide* and *Artists: Their Lives And Works* were our main source of inspiration. The stories of the people detailed in those books were the most fascinating parts, and we want to convey aspects of those stories in a visual way. Our focus on the stories of these people led us naturally to a technological source of inspiration, the screen-based displays you often find in museums (see fig. _).

Figure _. *(Figure numbers likely to change as we make edits) - https://prodisplay.com/market-sectors/public/museums-galleries/*

We want our data visualization to convey a neutral tone that encourages exploration and learning. We want to make something similar to this, but achievable on a web browser.

Inspirations While Revising

After we discussed our proposal with our assigned TA, we had a few takeaways concerning the direction of our project. One of them was that we should be visualizing more interesting data using more traditional methods. We then brainstormed some interesting traits about the artists in our data (namely, art medium, and means of death), and thought about representing those using a parallel coordinate visualization (see fig. _).

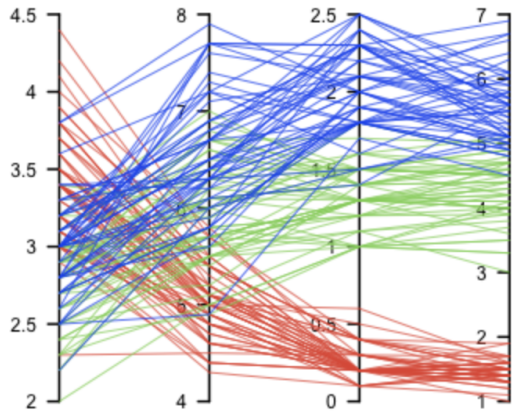


Figure _. (wikipedia article on parallel coords)

However, we decided that this kind of visualization would not be very interesting because it is unlikely that art medium has any correlation with means of death (for example). We then remembered a somewhat similar visualization technique that would be both more aesthetically pleasing and appropriate for our type of data: chord visualization.

In particular, we really like the famous *The Lord of the Rings* chord visualization (see fig. _). We were inspired to use this visualization's look and functionality to convey those tangential traits of our artists. In combination with dropdowns that can change both the grouping of our artists and the data attribute they map correspond to (medium, means of death, etc.), we can have a dynamic version of this visualization (for more details, see *Design Evolution* for further details).

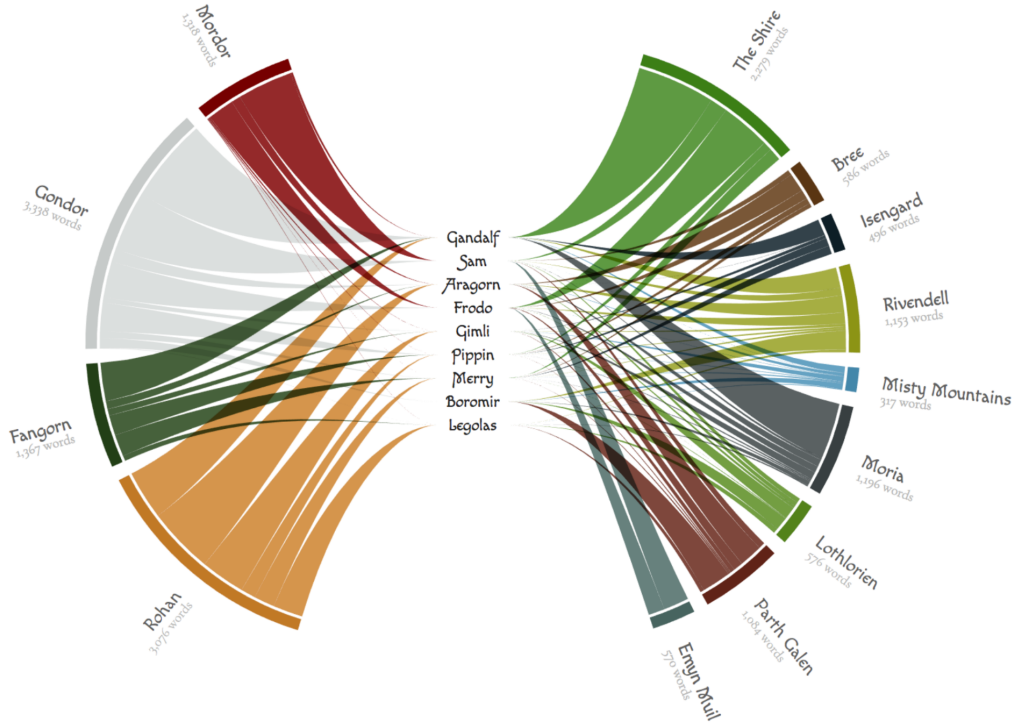
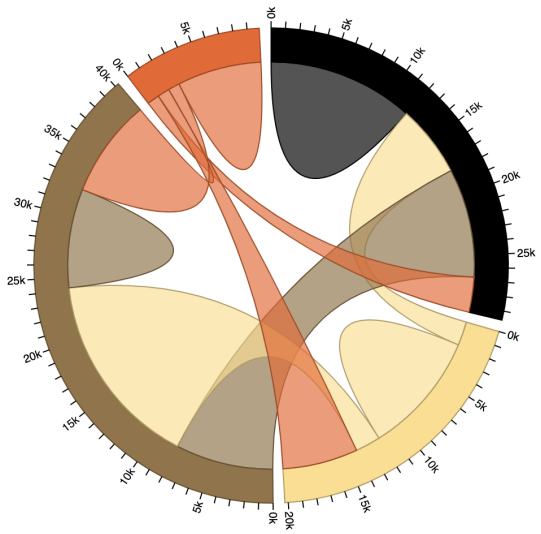


Figure _. (https://www.datasketch.es/project/lotr)

In addition to this example, we also took large inspiration from the in-class discussion on chord visualizations, and the accompanying code (see fig. _). However, we took even more direct inspiration from the freely available chord and ribbon code on the official Github repository for d3. We followed the footsteps of the creator of figure _, and decided to take the general methodology in the d3 code, and tweak it to look closer to what we want (see *Implementation* for further details).




```
<!DOCTYPE html>
<meta charset="utf-8">
<style>
    body {
        font: 10px sans-serif;
    }

    .group-tick line {
        stroke: #000;
    }

    .ribbons {
        fill-opacity: 0.67;
    }
</style>
<svg width="500" height="500"></svg>
<script src="https://d3js.org/d3.v7.min.js"></script>
<script>
    {
        // Our input data
        let matrix = [
            [11975, 5871, 8916, 2868],
            [1951, 10048, 2060, 6171],
            [8010, 16145, 8090, 8045],
            [1013, 990, 940, 6907]
        ];

        let svg = d3.select("svg"),
            width = svg.attr("width"),
            height = svg.attr("height"),
            outerRadius = Math.min(width, height) * 0.5 - 40,
            innerRadius = outerRadius - 30;
```

Figure _

Another part of the course that inspired us was the lecture on world map projections. Originally, we used an equirectangular projection to get some code off the ground quickly, but after learning about other projections from that lecture, we changed it to the one that we learned is the most well-rounded: Winkel tripel (*Citation to lecture slides perhaps*). You can see this difference in our early code in figure _.

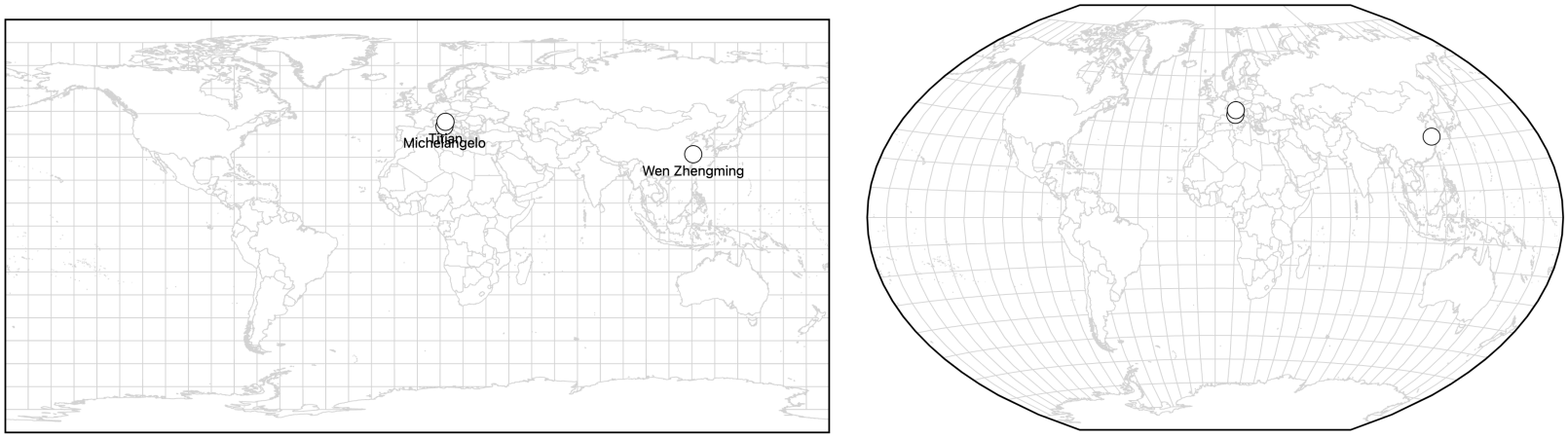


Figure _. …

*<u>*Elaborate on connection between HW6 and D3 force physics simulations if we successfully implement it*</u>*

Questions

Questions That We Are Trying to Answer

The most important questions that we want to answer visually are those in relation to the nature of inspirations between artists across all of history. A good way to contextualize this is to look at an example artist like Diego Velázquez. The first couple of questions we have about Velázquez are,

> ***"Which notable artists were major inspirations for Velázquez?" and "which notable artists did Velázquez inspire similarly?"***

Within these major questions, we then have more detailed questions concerning the nature of the inspiration both ways. For example,

> ***"Did Velázquez inspire people while he was alive, or did his work become more inspirational long after his death? If so, how long after?"***

are examples of the nuance of those deeper questions we are aiming to answer.

Meanwhile, there are more cut and dry questions that we want to answer. Still using Velázquez as an example, we would like to know,

> ***"When did Velázquez die? When was he born? Where was he born? When did he die? Where did he die? Who were his contemporaries?"***

While these are all simple facts that one can find easily on Wikipedia, one of our goals is to centralize the blunt answers to these questions visually. All together, the answers to these questions build a more comprehensive picture of the people in our data.

Lastly, we want to answer broad questions that apply to groups of data. The two that we are focusing on are,

"How many artists in a given century used certain types of artistic mediums?" and

"how did the artists in a particular century die?"

Answering these questions will both establish context, and convey interesting trends (see *Implementation* & *Design Evolution* for more details).

Development of Existing and New Questions

Of our initial questions, the ones that changed the most clearly are those related to influences between artists. Initially, we simply wanted to answer the question,

"Who influenced whom?"

That question became more layered, and after we finished our project proposal, we wanted to answer the more nuanced questions that fall under that main question more overtly. For example,

"What is the range of this particular influence relationship temporally?"

is a question we now want to clearly answer visually rather than simply providing the dates through text and letting the audience figure it out. Also, in an attempt to convey trends among our data entities in an interesting way, we desired to answer the questions addressed in the previous subsection concerning the means of death and mediums of a given artist. Both of these revisions are key, and we believe that they will make our audience more keen to explore, which is one of our main intentions.

Data

(Pasted in data section from the proposal here for now. *Will properly retool*) We created our own data set by curating information from many sources. The majority of our data is from books and Wikipedia. We have taken the individual artist information and the details about the artwork they created from Wikipedia. It includes details like name, place of birth, place of death, traveled places, and famous artworks. To find the influence of artists from across the world we read through multiple articles on the internet. We referred to *Art: The Definitive Visual Guide* and *Artists: Their Lives And Works*, which have data about the artists' lives and how their artwork was influenced by the other artists around them or in different countries. One can see the Entity-Relationship diagram of our data with initial attributes and entities in figure 1.

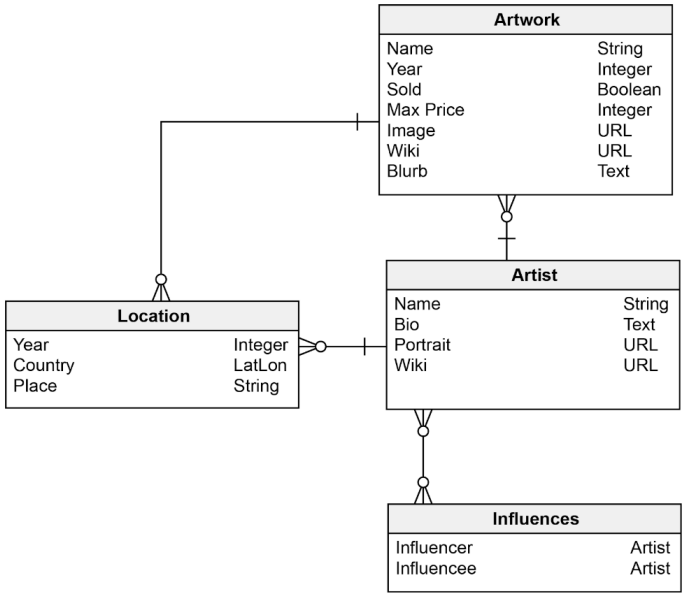


Figure _. *The Entity-Relationship diagram of our database structure*

(Pasted in data processing section from the proposal here. *Will properly retool*) As we are generating the dataset for our visualization, we won't need to perform any data cleanup. All the datasets will be stored as JSON files that will be loaded on startup. The name of the artists and artworks will be used as keys for querying the datasets using standard d3 methods. We won't derive any data beyond the generation of the lifespan histogram in one of our optional features.

Exploratory Data Analysis

Map & Timeline

The first way in which we visually explored our data was plotting the appropriate part of it onto an early version of our map component. After seeing the data this way (see fig. _), a few improvements became obvious.

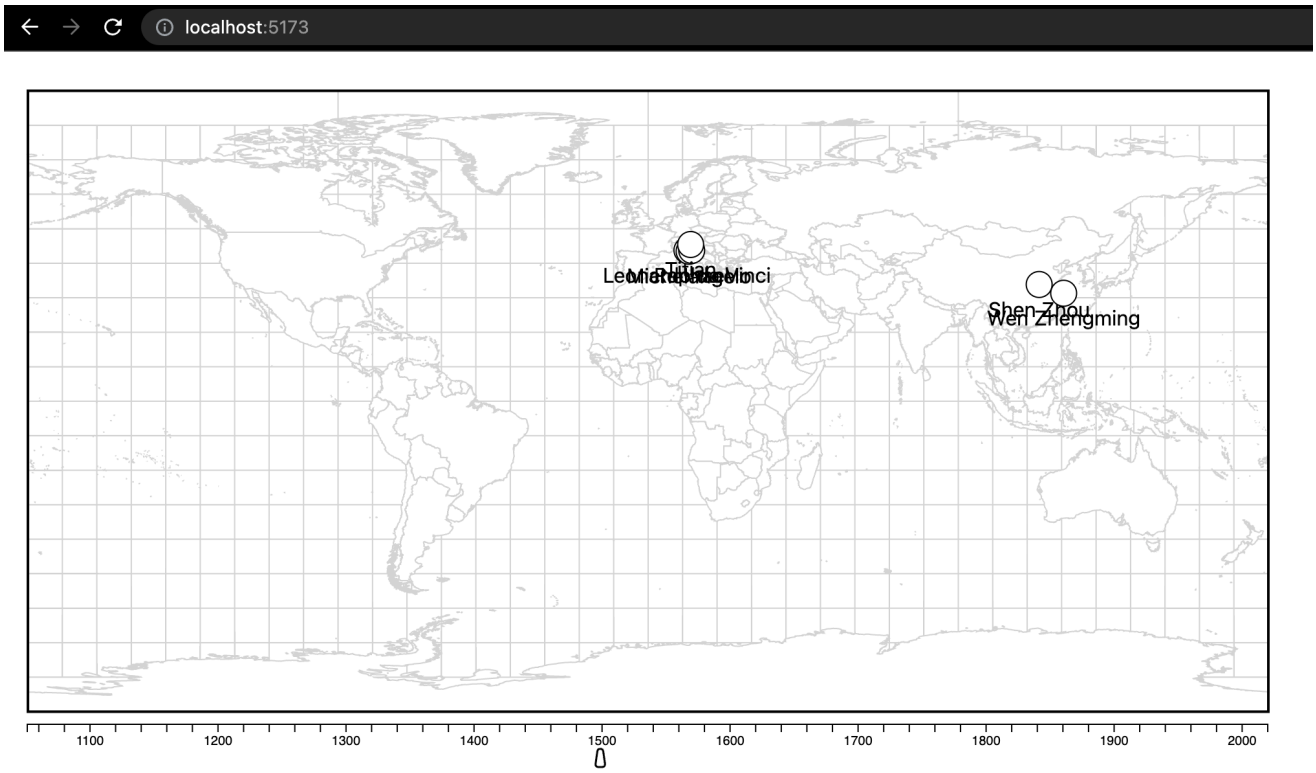


Figure _ …

Firstly, this initial code made it clear that our data tends to cluster during certain periods, and that highly obscures the data we are showing. We have a few fixes in mind for this. Firstly, we are experimenting with displaying the artist's name with a tooltip (see fig. _). We like this because not only does it address this spacing issue, but it also inherently encourages interactivity and exploration. We also have the idea to use a d3 force physics simulation to space the markers well, and use lines to point from their adjusted position to their actual location (for sketches and further details, see *Design Evolution*).

Something else that became apparent through our exploration that figure _ shows is that there are geographic gaps in our data. We have little to no artists from Africa, South America, Canada, and parts

of east Asia. To make the most of our screen real estate and means of visualization, we plan on augmenting our data to fill in these gaps.

Speaking of gaps, we also have some temporal gaps in our data. This problem exists mainly between the oldest artist in our set, who lived around the 11th century, and the late 14th century. We think that a good way to remedy this useless gap would be to do a bit more research to find artists with links during that period. As a minimum, we want to have at least one artist per century, and reaching that should not be very difficult.

Chord Chart

As for our chord chart, we conducted a small amount of experimentation on it. We do not have our actual data wired into it yet, but we replicated some attributes of our data to see how it would look generally. For example, we experimented with our main grouping, artists by century, by programmatically drawing 10 arcs to match the 10 centuries in our data. We also used this opportunity to see how one of our data attributes that the arcs would map to, means of death, would look as well. The result (see fig. _) is fairly close to what we expected.

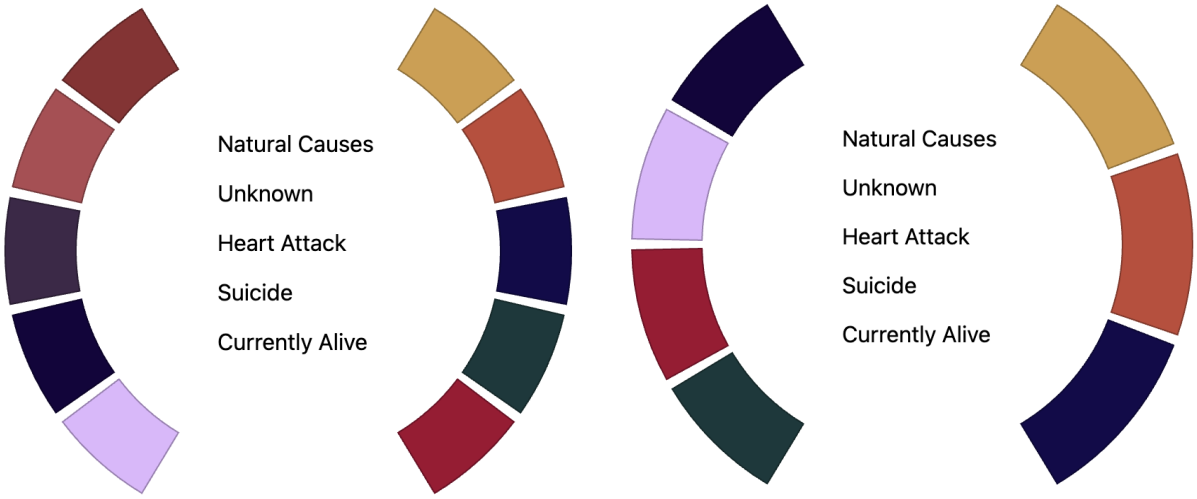


Figure _. *Two examples of our early chord visualization on n=10 (left) and n=7 (right) data groupings.*

Through this experimentation, we revised our code to account well for an odd number of groupings (see fig _), and further revised the spacing between the arcs and attributes to account for our eventual custom d3 ribbons connecting the two (see fig. _).

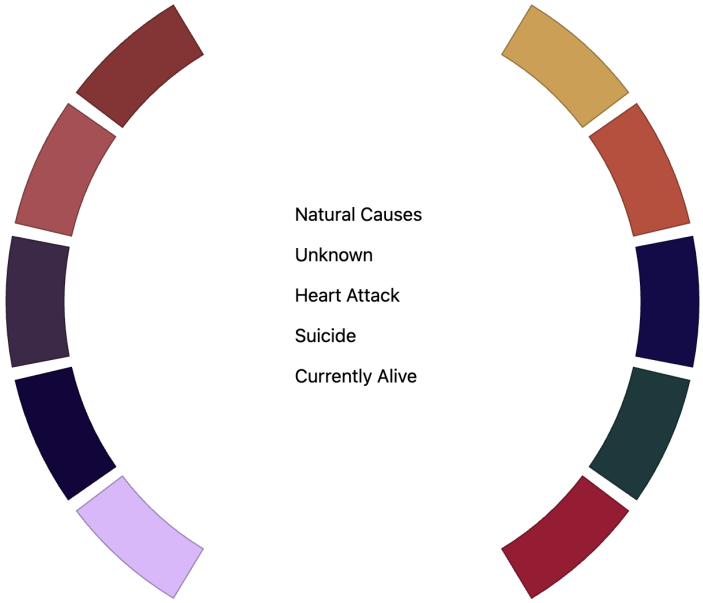


Figure _. *Early demonstration of better spacing while we are working on the connecting ribbons.*

Design Evolution

Early Stages

Our elements that remained constant include a world map, timeline, arrows showing influences, and text-based artist identifiers, but the rest of the design has certainly changed. The first major development occurred before we wrote much code at all. We synthesized our first three sketches into a single agreed-upon design. Our first prototype emphasized the timeline a bit too much, and lacked filtering to avoid influence arrow clutter (see fig. _). The second sketch carved out some good ideas for avoiding that clutter, but it did not utilize geospatial encoding well (see fig. _). Then our third design emphasized a niche part of our data that we may not even have in the end (that being 'lost' artworks) (see fig. _)

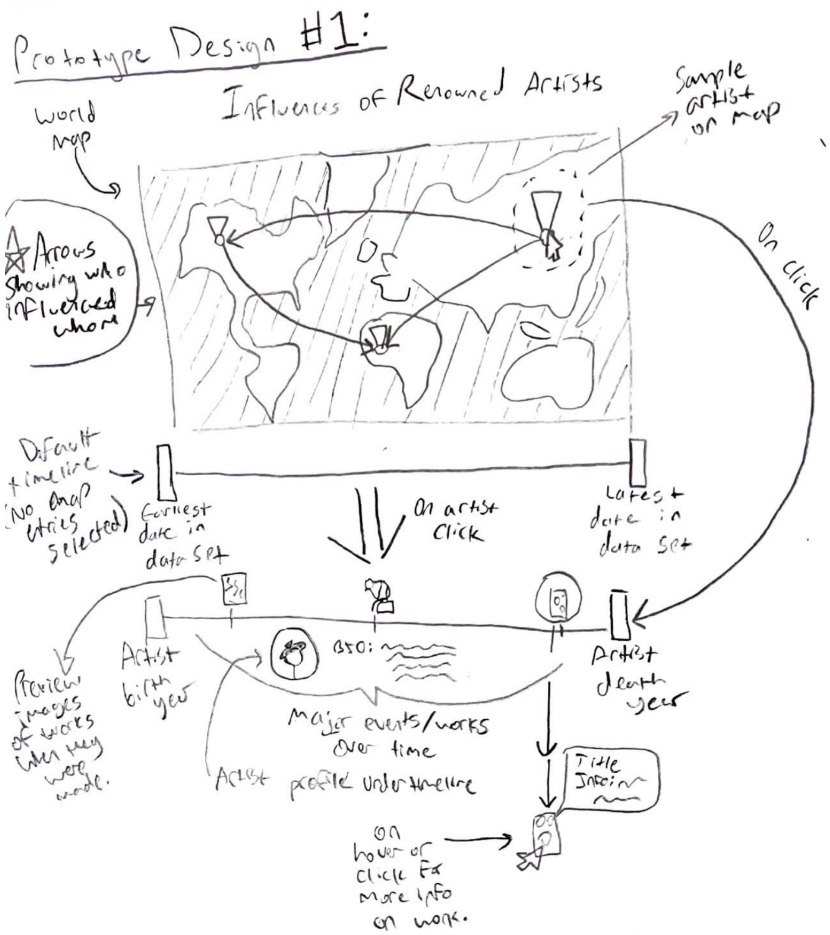


Figure _. *Mockup design sketch number one.*

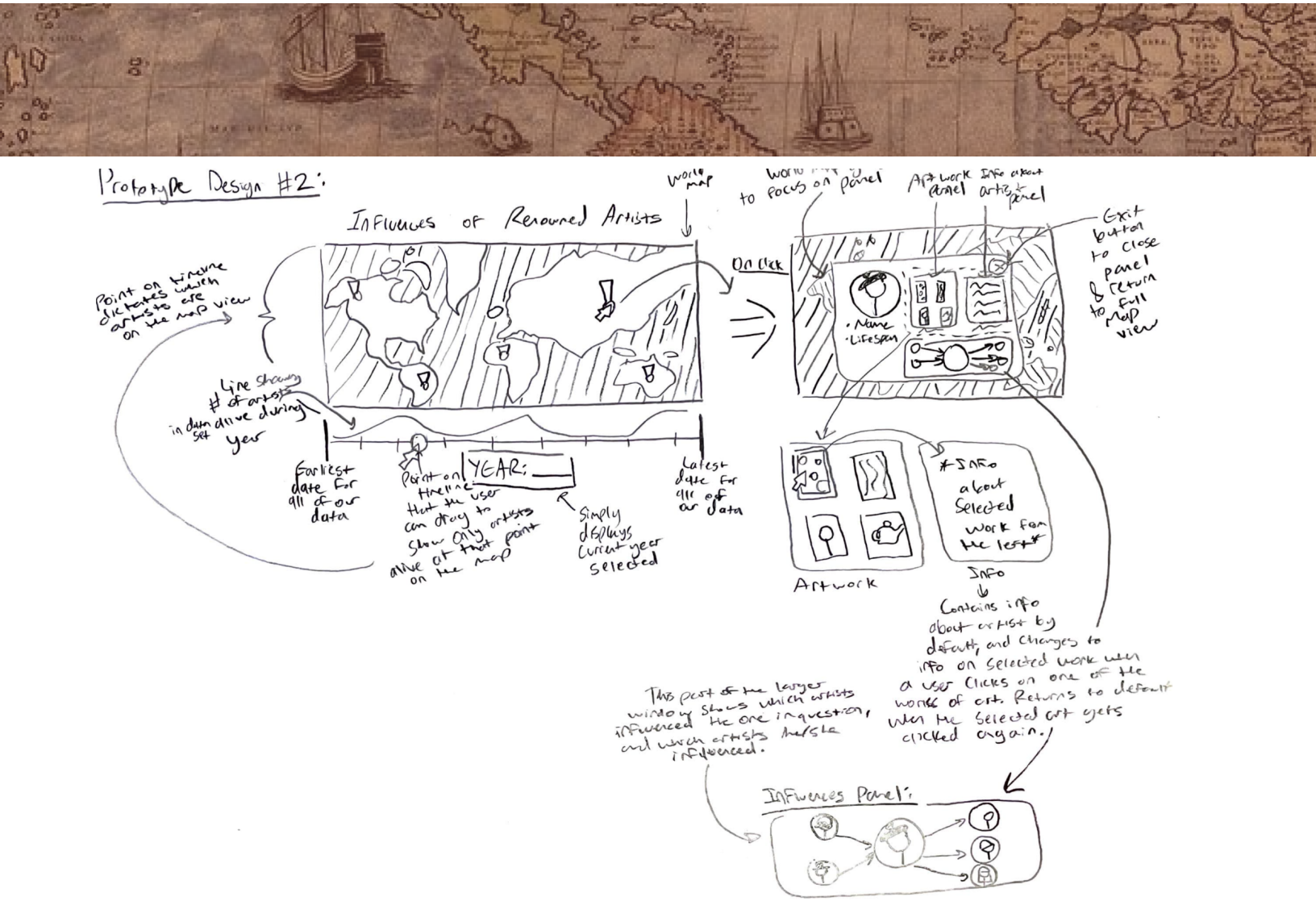


Figure _. *Mockup design sketch number two.*

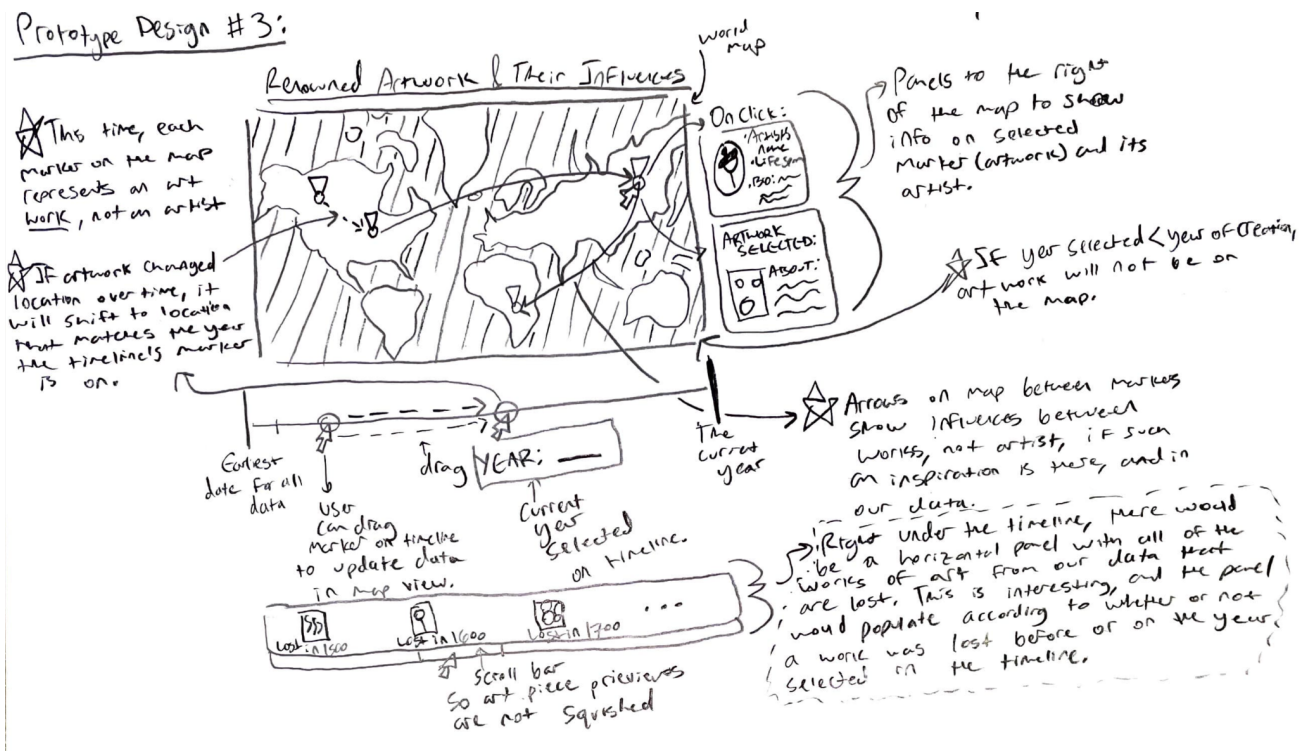


Figure _. *Mockup design sketch number three*

The last major sketch we drew before starting to code leverages the best encodings from the 3 prior designs. Our world map view uses the fairly strong 2D positioning as a visual encoding for artist location. Plus, the fact that it is a world map effortlessly establishes context that everyone can infer. Additionally, the use of a world map conveys the actual distance that the influence between two artists spans. The orientation, or shape, of our influence arrows encode the kind of influential relationship between artists. The timeline uses 1D length (which is even more easily readable than 2D) to encode time well.

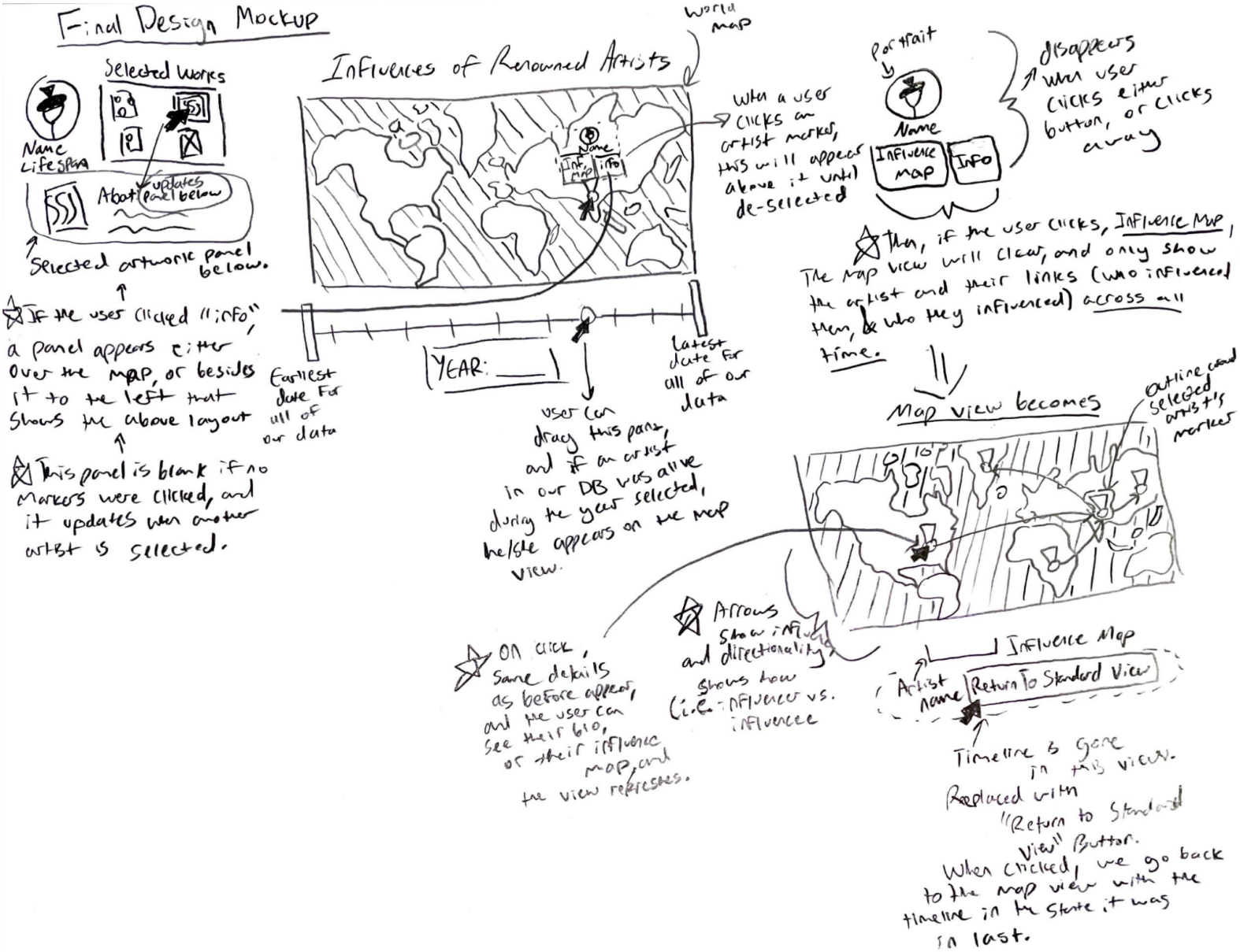


Figure _. *…..*

After Our Proposal

Once we began to get some code off the ground, we retooled our design in a few areas. The first being the positioning of our map markers. Once we realized that our markers could cluster together in a negative way (see [Exploratory Data Analysis: Map & Timeline]), we thought of a solution involving utilization of a d3 force physics simulation. You can see the design that we had in mind in figure _.

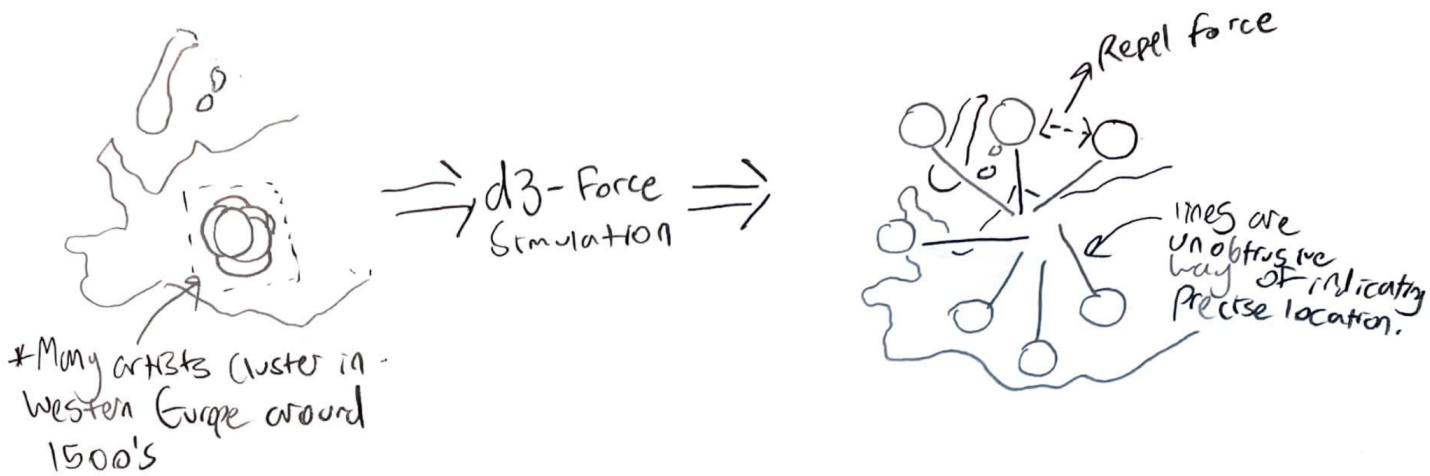


Figure _. …

We think that this design works well because it maintains the precision of the artist's location, adds a slight 'wow' factor to entice exploration, and it solves our otherwise unfixable data occlusion. Another design alteration that entices exploration is one related to the artist markers. In order to make our visualization more legible, we decided to encode the number of influence relationships an artist has by the color of their marker's outline (see fig. _).

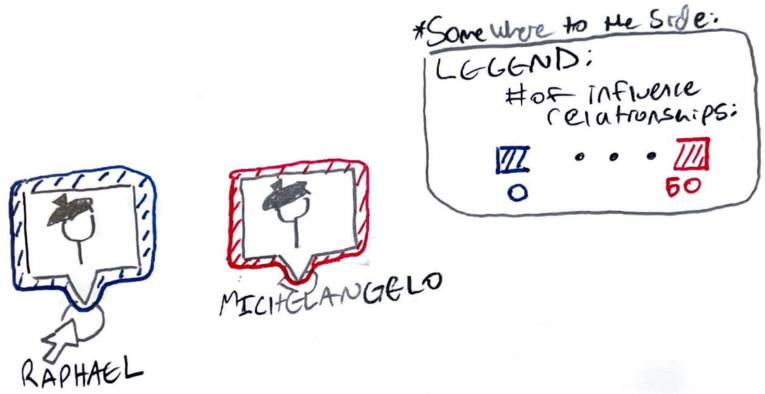


Figure _. …

This minor redesign is simple, but it uses color to encode something vital to our visualization, how many influence links the outlined person has in the data set. This gives some direction to our default view before the influence links pop up for a selected artist, and as long as we avoid the problematic red-green color mapping, this should not result in issues for those who may be color blind.

Another simple encoding that would enhance our design relates to the influence arrows. In addition to using directionality to encode the type of influence relationship, we want to use the width of the arrows to encode the time an influence has traveled (see fig. _).

Figure _. …

This encoding would add depth to the influence map and even contribute identifiable trends. For example, if an artist's influences are all wide arrows, then that conveys visually that the artist's popularity saw a resurgence long after his or her death. This also cuts out the time a user would have to spend calculating and comparing the differences in time across influences manually with any textual dates we may provide.

Additionally, we took an older optional component, and made it essential. In the second of our three initial mockups (see prior subsection, *Early Stages*), we thought about having a histogram-like line chart plotted over the timeline. Now that we want more traditional visualizations for our project, it seemed natural to actually implement this. You can see our small sketch for this idea in figure _.

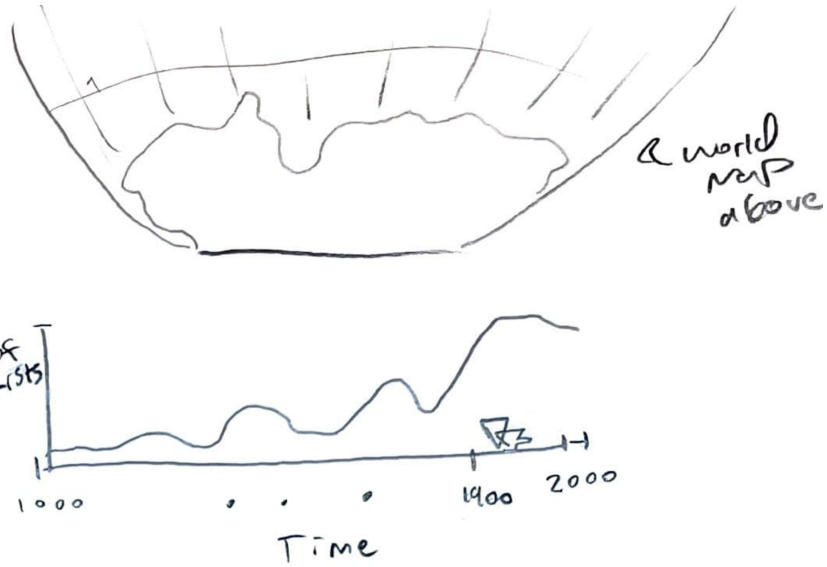


Figure _. …

We think this addition is a good idea because it takes a very straightforward visualization method, a line chart, and conveys areas of interest throughout our temporal dimension by indicating the amount of artists that were alive during different years. Similarly to our marker color encoding (see fig. _), it adds some direction to the exploration process by effortlessly conveying some derived data.

The changes discussed so far have been largely modifications to existing visual components or bringing back old ideas. This next one involves an entirely new component that can provide a higher level overview of our data without the clutter of seeing all of our map data at once. This is our chord visualization, and our focus has shifted away from conveying information about artworks and artist biographies to this instead. Our design (see fig. _) would simply be a different view on the same page as our aforementioned components. We think it belongs there because of its interactivity with the timeline, and the amount of potential combinations of groupings, attributes, and timeline placement would encourage even more exploration.

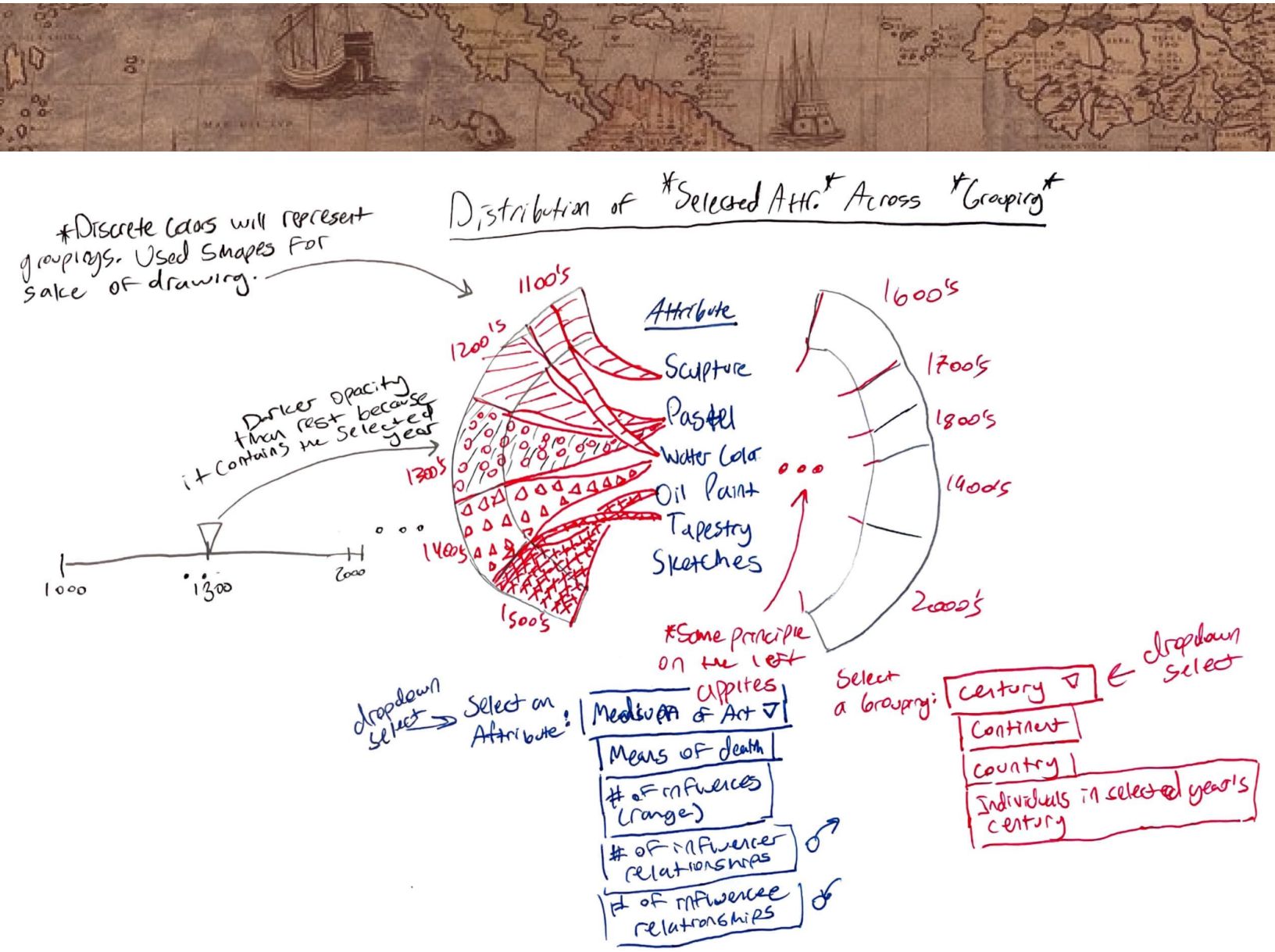


Figure _. …

Additionally, we plan on avoiding the clutter that our sketch has by coloring each grouping distinctly, and applying opacities lower than 1.0 to avoid occlusion (see *Related Work: Inspirations While Revising* for proven examples of this that inspired us). Overall, we believe that the combination of this visualization's higher view of the data, and the map's closer view of the data will contribute to a balanced and more complete visualization.

Implementation

Yet to be written

Evaluation

Yet to be written