Project 2: Collections, Database, Visualization, Interface

Overview

This assignment investigates the transformation of data into comprehensible information, and from comprehensible information to explorable information.

From the Syllabus

"In this project, you will build a database from a collection of 100 items, work to structure the database in a cohesive and coherent manner, design a static data visualization that represents this database, and, finally, create an interface for a user to navigate and explore this database. This project and the challenges it presents will help you cultivate an extremely wide range of skills and sensibilities centered around the relationship between data, information, and interaction."

Project Objectives

- Become familiar with ordering, presenting, and sequencing information.
- Develop a familiarity with establishing categorical and hierarchical relationships of information.
- Use visual language to communicate complex information.
- Gain an understanding of the considerations necessary in the design of informational interfaces.

Preface

One of the defining characteristics of interaction design is its relationship to data. Apps, websites, and today's "smart" devices rely on a connection between **database** and **interface**. But how does the way we design the interface—and the constraints within which we have to work given a particular medium or technology—shape the user's understanding of a database? How does it allow them to understand the relationships between data points and see information emerge? If people learn things from making connections, what kinds of connections do our designs reveal? And how are databases constructed in the first place? What kinds of interpretive work is done in order to gather and structure data within a database and how does this affect a user's understanding of that data?

As described in the syllabus, this project will take place in three parts:
   1) Gather the dataset and define methods for structuring the data by using metadata.

2) Visualize the data, creating a clear visual system for the structure of the data you defined (this is what we might call a "mapping" of visual information onto other kinds of information).
3) Propose and design an interface for a potential user to explore your database (i.e., a website or mobile application).

One important thing to note: this is not exclusively a "dataviz" assignment. So, while a static data visualization is *part* of the project, the whole project is something quite different.

Part 1: Gathering and Organizing Your Data

The assignment begins with a thorough documentation of a "collection" of your choice that includes at least 100 items. This will become your *database*.

Examples could include:
1. Your comic book collection.
2. A set of "collectables" that you have personal knowledge and interest in: dolls, stamps, relationship partners, garden gnomes, etc.
3. A live "sample" of similar objects: the next 100 cars that pass by, or the next 100 people you encounter, the next 100 meals you eat, or the next 100 snaps(?)
4. All songs that sample the "amen" break

Create a detailed record of your collection, noting specific details for each item. What should be recorded for each object? Contemplate the context of how the items in the collection are created, marketed, and used. Do not limit yourself to general facts such as dates and genres, consider personal interactions with these items as well.

Once you have a thorough accounting of the items, use the principles of Richard Saul Wurman's L.A.T.C.H. (Location, Alphabet, Time, Category, Hierarchy) to identify seven unique properties through which you can organize or sort your collection. A certain amount of creative interpretation should be applied when choosing organizational methods. For example, in a collection of music organized chronologically, items could be put in order by their release date or by the date of purchase. Both methods of organization clarify the collection. One is personal. One is not. For this assignment, both methods are constructive. Be creative in your selection of organizational methods. Pushing beyond the expected will reveal deeper and more interesting insights into your collection.

For example, a record collection can be organized by the following seven parameters (i.e. each album is tagged with the following "metadata"):
1. Name of artist (alphabetical)
2. Name of album (alphabetical)
3. Date album released (chronological)
4. Number of tracks (hierarchy)
5. Genre (categorical)

6. Number of times played (hierarchical, personal)
7. Date album purchased (chronological, personal)

(Some other things to consider in the above collection: what about artist nationality? Or net worth? Or the US GDP when the album was released—i.e., does the kind of music we listen to reflect in some way our political-economic condition? The metadata we choose and/or capture tells a story and is *never* "objective." Databases are constructed to be a certain way, to cater to a particular function. So you should feel free to take some creative liberties with the metadata in your collection. Because tech companies do that all the time.)

NOTE: since we have things like Spotify and Apple Music, I'd probably advise against using just a "collection of my favorite 100 songs" as your database. If you do something related to music, I can make some suggestions -- one successful project was an analysis of the samples used by Girl Talk in "Night Ripper." You could also consider the relationship between music and its context (e.g., weather, geolocation, etc.)—another interesting student project looked at the relationship between weather data and activities in which they were engaged when listening to particular songs. But still. Take into careful consideration the kinds of databases already at our fingertips and the ways you might avoid trying to duplicate them.

Part 1 Deliverables

● A Google Spreadsheet of your Database, complete with 100 entries (at least)

==[OK now this is where we talked about having some "tracks" that students can choose from – a more dataviz focused track and a more sort-of explore/navigate this database by other interface means track]==

Part 2: Static Data Visualization

Design a large-format poster (28 x 44 inches) that clearly presents your collection while illustrating how each "entry" in your database (i.e. album or DVD) relates to each of your seven organizational schemes.

Unlike a computer database, printed content cannot be resorted at will. The challenge of designing this poster lies in creating an understandable structure of information that clearly presents all seven data relationships simultaneously. This will require placing the chosen sorting methods into a clear hierarchy. What organizational methods are most important based upon your opinion as to how others should view this collection?

For example, if a record collection is organized by the following five parameters (i.e. each album is tagged with the following "metadata"):

1. Name of artist
2. Name of album
3. Date album released

4. Number of tracks
5. Genre
6. Number of times played (personal)
7. Date album purchased (personal)

the designer may decide that (1) is the most useful method of organizing the collection, (6) is the second most important and (5) is the third. This hierarchy might lead to a tabular chart with the albums listed in alphabetical order with sub-groupings like (5) visualized within the overall structure via formal relationships—color, scale, typography, etc. (*It should be noted, however, that this is a very simple and straightforward example. It would not be the most exciting-looking poster in part because the database is, well, similarly, not too exciting.*)

Your poster should clearly present the collection and allow an audience to compare and contrast the various methods of organization that have been established. It should be a model of typographic design, easy to use, easy to understand, and easy to look at.

References and Resources

Some resources on data visualization can be found below. This is by no means an exhaustive list, so if you find something interesting, let me know and we'll add it if we think it will be helpful.
- [Chart Types](#) - a useful guide
- One of the longest-running dataviz blogs: https://flowingdata.com/
- [Information is Beautiful Awards](#)
- W.E.B. Du Bois and early dataviz
  - [How WEB Du Bois used data visualization to confront prejudice in the early 20th century](#)
  - [W. E. B. Du Bois' staggering Data Visualizations are as powerful today as they were in 1900 (Part…](#)
- Florence Nightingale
  - [Florence Nightingale is a Design Hero | by RJ Andrews | Nightingale](#)
- [Catherine D'Ignazzio](#) and Feminist Data Visualization
  - Read *Data Feminism* (her book) in full: https://data-feminism.mitpress.mit.edu/
  - Early paper: http://www.kanarinka.com/wp-content/uploads/2015/07/IEEE_Feminist_Data_Visualization.pdf
- Articles on sketching and dataviz
  - https://www.nationalgeographic.com/news/2015/07/2015704-datapoints-sketching-data/#close
  - [Sketching with Data Opens the Mind's Eye | by giorgia lupi | Accurat studio](#)
- Designer: Nadieh Bremmer
  - https://www.visualcinnamon.com/portfolio/
- Studio: Stamen (more focused on maps but they do all sorts of stuff)
  - https://stamen.com/
- Studio: Fathom
  - https://fathom.info/projects/

- Article: Disinformation Visualization
- Nightingale, the journal of the Data Visualization Society – Medium
- Data 4 Black Lives
- NYT Graphics Twitter
- https://drones.pitchinteractive.com/

Some recommendations for process:
- Begin with sketching and lots of it. Think about how different chart types can structure your information in different ways and thus create different "readings" of the relationships between the data. Use the guide to chart types as a reference but feel free to explore mixing chart types or modifying them.
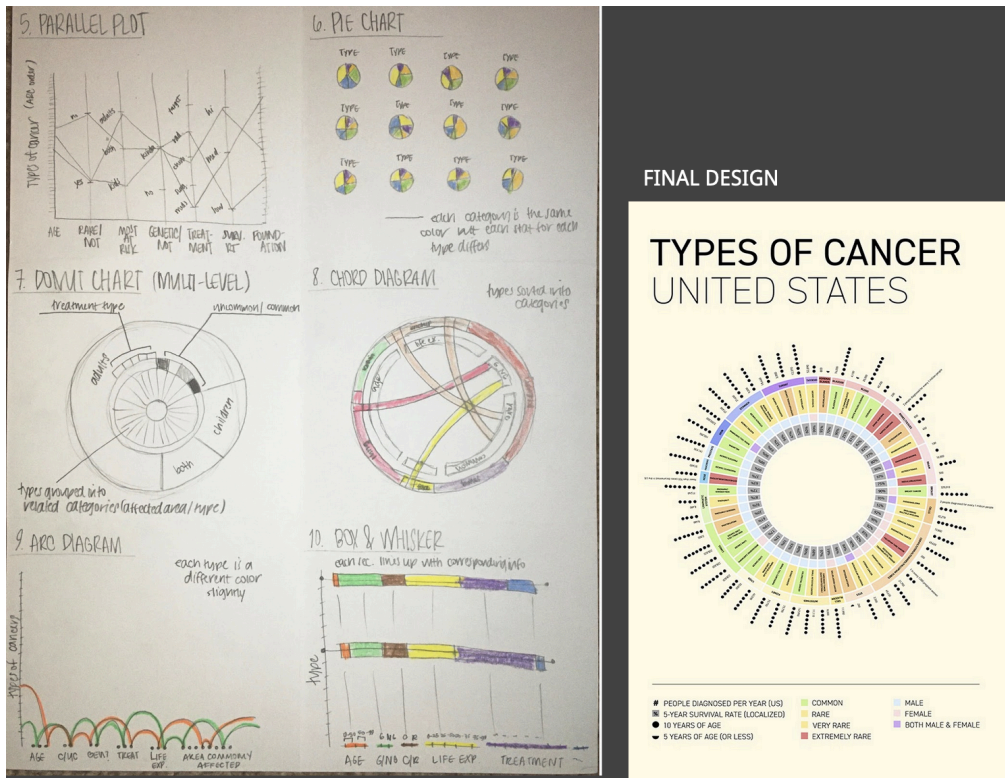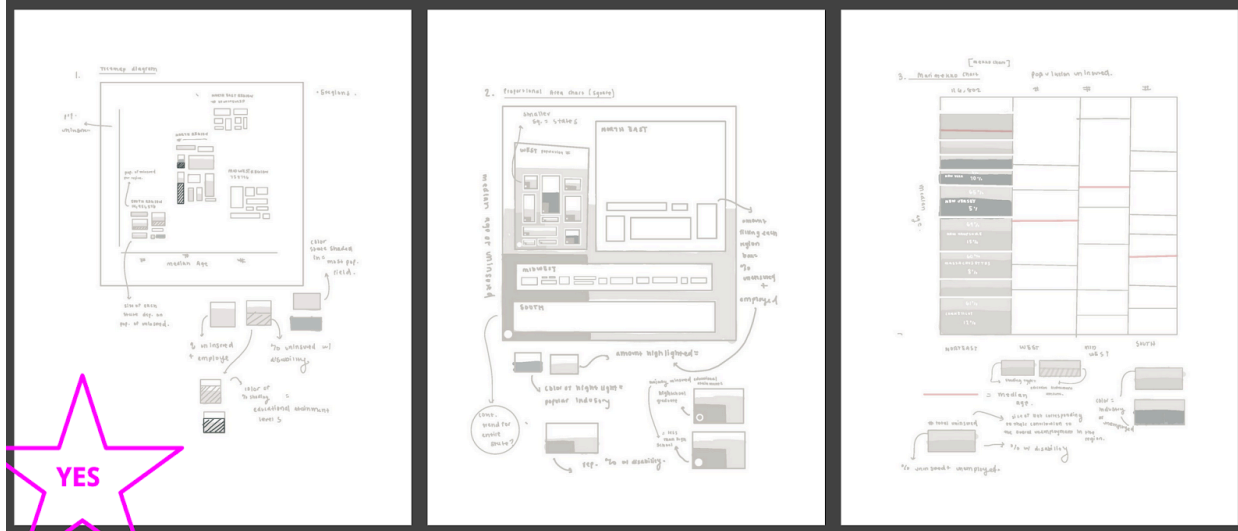- Some examples below:
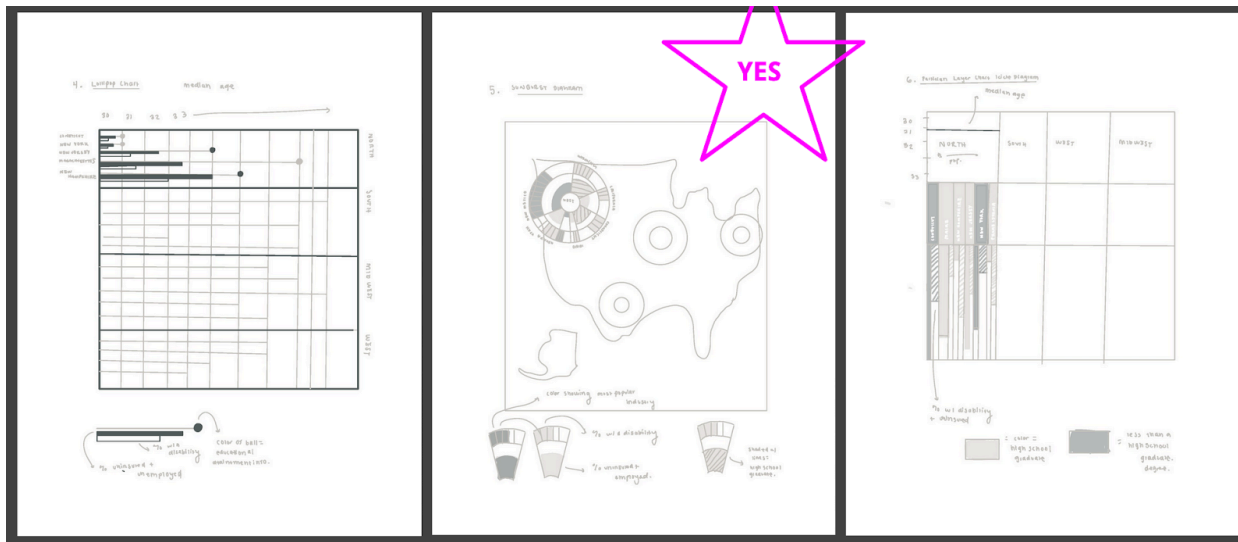   -
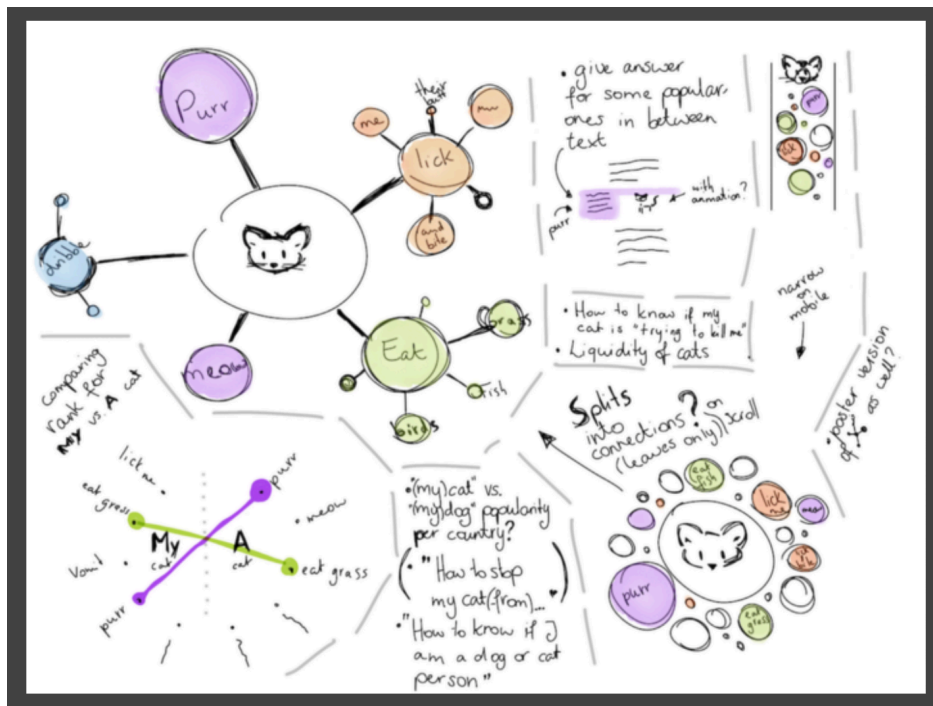
(Nadieh Bremmer, 2019)
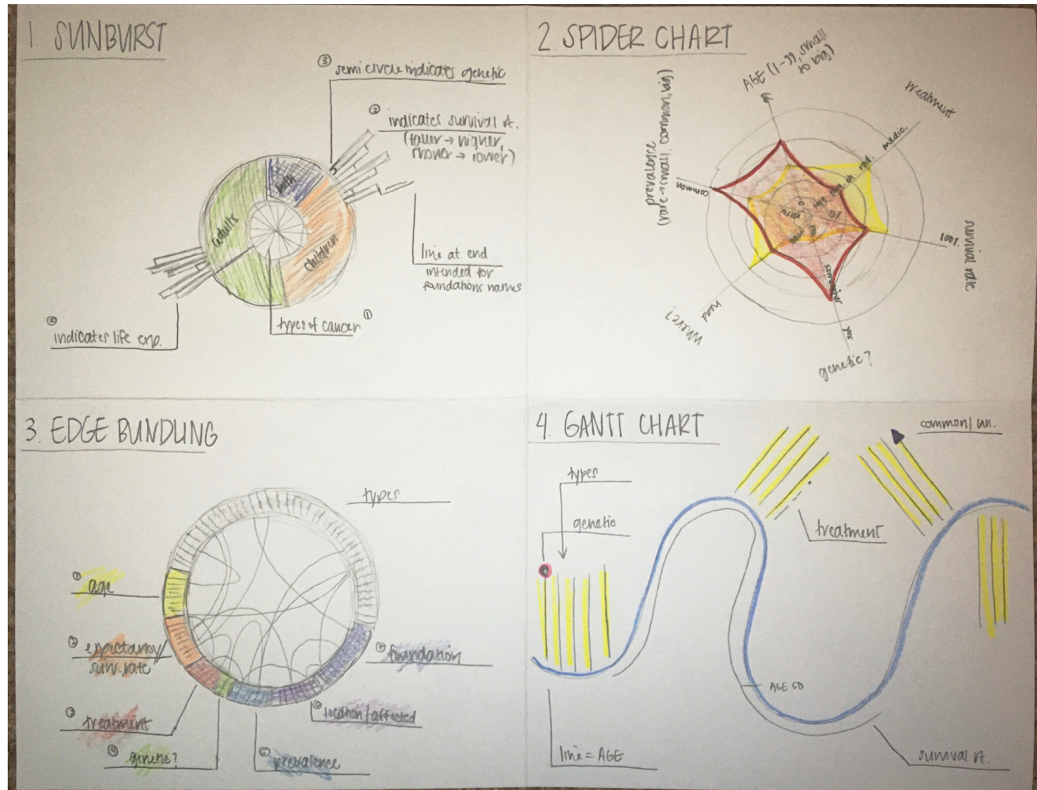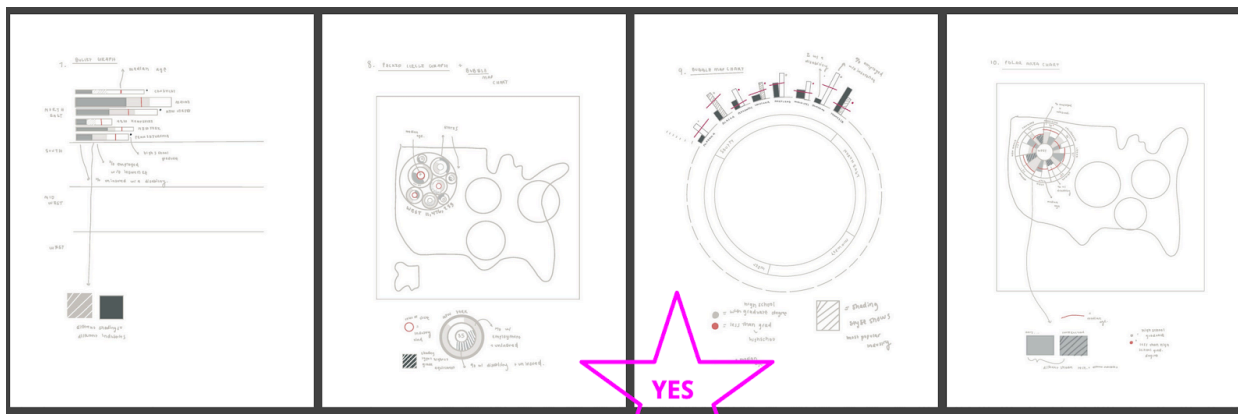
■ Ansley Orr, 2020 (student)

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■ Lauren Johnson, 2020 (student)

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■ Lauren Johnson, 2020 (student) -- notice here how you can strategically combine different types of charts and experiment with the hierarchy of the data (map - location - with a radial or nightingale chart nested inside)

- Only once you've actually explored a multiplicity of options through sketching and developed some good conventions for your approach to the visualization (e.g., color schemes and typographic rules), only really then is it worth beginning your design digitally (most likely in Illustrator).

Part 2 Deliverables

- A PDF of your final data visualization
- Excellent documentation of your progress on it in your Project 2 Progress Document.

Part 3: A Digital Interface to the Database

You will develop an interface that will allow a user to have control over how your database is viewed. Your challenge is to develop an interface that can scale to accommodate more entries to the database. Think about what happens when there are 200 entries? 500? Consider also what your user can learn about the collection as a whole from interacting with the interface. (e.g., should there or could there be a way for a user to realize that all the albums you purchased in the month of May within any given year were released between 1992 and 1996?)

First you will develop a series of wireframes for your interface. Your wireframes will help you determine the basic functionality of your interface before you begin the design process, and help you define how a user will move through the application. As you know, wireframes can take different forms and can take on varying levels of "fidelity" (i.e., detail). The way you approach your wires is up to you, but you should be intentional about the way you incorporate them into your design process, the kinds of wireframes you produce, and the way you iterate from lower- to higher-fidelity.

Your designs/prototype must include:

1. Overall menu system and screen design for your database.
2. A search-and-browse mechanism for your database that allows users to find items in any one or in any combination of your seven metadata categories.
3. Show how you would find one specific record in your database (search results page that includes some level of detail about the items - think about e-commerce sites and phone books here).
4. Show how you would add a new record (entry) to your database.
5. Show the layout and design of one record in your database (in other words, an item detail page). This should include an image (or some type of representation) of the item.
6. Show how you would find multiple records that meet three different criteria (e.g. songs that are hip-hop, released in 2011, and have a 2 star rating).
7. On the search results page, show how the user could sort and filter the results according to different criteria.

Note: each one of these items may require multiple screens to show its full functionality.

I would suggest that you begin wireframing with large scale paper sketches instead of working digitally right off the bat.

I would also suggest not worrying about how the user arrives at your database or why they are there in the first place. This is not within the scope of this project. What *is* within the scope is considering some of the very foundational principles of interaction design: how does a user know where they are within the experience? How do they know what they are able to do at any given moment? What cues have you given them to help them understand the kinds of affordances you are offering them to explore the database? What kind of feedback are you giving a user so that they know that they have made a change, adjusted a query, or manipulated the parameters of their search?

It is important to note here that this portion of the project *does not need to be an interactive version of your data visualization poster.* You can approach the visual design of the digital/interactive component of the project in a different way (although some consistency in typography, color scheme, etc., is probably worthwhile or at least will ease the decision-making process for you). What's crucial is that you approach the decision-making for how to structure and organize your site/interface with intentionality. If you choose to basically make an interactive version of your data visualization, you should have a good reason for doing so. Remember that the forms we make should always emerge from the content of the project and the context of use. We should never lead with form.

Think about it like this: all e-commerce sites (e.g., Amazon) are interfaces to databases. Spotify is also an interface to a database. As I mentioned earlier in this assignment, nearly every single interface we design connects in some way or another to a database (or more likely multiple databases). So, while you created a static data visualization for the second part of the project as a way to get some practice with mapping the properties of different visual elements onto the properties of information, you don't need to make an "interactive version" of your poster. Again, considering how form emerges from content and context will ensure your project makes sense in this regard. If, for example, you did something innovative with a music collection and tagged by geolocation where songs were most frequently listened to, could you design a mobile interface that would allow a user to explore a music collection by moving through space?[1]

Consider the context of your database. What *kind* of data is it? What kind of ways might be most interesting or informative to engage with it? Should it be a way for users just to browse the data that's there? Should there be a predictive/recommendation component? Or a personalization component? Will you work mobile-first? Should the experience change depending on viewing context (mobile vs. desktop)?

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[1] If you proposed something a little more "outside the box" like this, I'd be happy to work with you to figure out how to (or whether you need to) address all the above criteria.

A student once did a project on 100 last meals requested by death-row inmates and then created a "meal-generator" based on the user's selection of the crime they were most likely to commit. The database was also easily browsable, but the immediate entry point to the experience was a prompt and recommendation system. This experience of the database relates directly to the *kind* of data the student gathered. Just as this student did, it will help you to think about the general concept behind the dataset, and how that concept can manifest in interaction.

Part 3 Deliverables

- An interactive prototype/click-through and video of it in action.
- Excellent documentation of process, including inspiration, sketches, wireframes, and designs. Please ensure this documentation is viewable on the web and shared with Zach (via Google docs, Notion, or other platform).

Some past student work

https://docs.google.com/document/d/1SFuxyIRbdedXurkytd9l7e1jztUvW6keixYwiTWUrG4/edit?usp=sharing

Questions for Self-Evaluation

Part 1 // Database structure and process: how was the process of creating the database for you? Do you feel like the structure of the database was successful for your project? Is your database complete (i.e., does it contain at least 100 entires completely filled in with all 7 properties of metadata)?

Part 2 // Data visualization—process: how did you approach the design of the static data visualization? Did your sketching process allow you to explore multiple ideas at an appropriate level of detail? How did you decide on a particular mode of visualization as the organizing principle (i.e., what kind of chart and/or what type of information functions as the main organizing principle and why)? As you worked digitally were you able to refine and iterate as well?

Part 2 // Data visualization—design: do you feel like the final data visualization is what you had hoped/imagined? How did you approach choices about color, typeface, iconography, use of shapes, lines, etc.? Does the piece succeed in allowing a viewer to make connections or see patterns in the data? In what ways?

Part 3 // Interface—process: how did you navigate the design of the interface? In what ways is it similar to or different from the data visualization? In other words, did you attempt to make the data visualization "interactive" or did you choose to go a different route altogether when designing the interactive portion?

Part 3 // Interface—interaction specifications: did your interactive prototype address the specifics of interaction as per the assignment? Are your files annotated in a way that makes the specific nuances of the interactions understandable to a developer (or Zach)? How are the fundamental ideas of interaction design (such as the do/know/feel paradigm) reflected in the interface you've designed?

Part 3 // Interface—visual design: In what ways do you feel as though the visual design supports the project? How did you make decisions around typography, color, imagery, etc.? Do the visual design decisions support the user's ability to interact (e.g., do they enhance or clarify the affordances in the interface)?