Topic: how aesthetics influence decision making

Title: A Cover Worth 1000 Words

Abstract:

Aesthetics tend to be something that tends to be taken for granted, even though the creation and appreciation of aesthetics is a fundamental part of what makes us human. Aesthetics play a huge role in our everyday lives, from affecting our mood, to even influencing the decisions that we make. Through this project, we'd like to create a page that is able to convey just how much aesthetics can influence decision making.

One way of showing this might be through book covers. There are datasets on the web with stats taken from goodreads.com (ex. https://www.kaggle.com/jealousleopard/goodreadsbooks), that show what the most popular books are, and basic information about them. If we choose to go down this route, then our project's goal would be to visualize how much of a correlation there is between a book's cover (aesthetics) and its average rating (decision.

11/24

Updates:

- Major changes to website layout, from feedback
- We have implemented all of our visualizations and user interactions, as well as styled our websites (e.g. defined color palette)

A COVER WORTH 1000 WORDS

They say to never judge a book by its cover. But sometimes, we don't even consciously decide on which books get our attention in the first place. For example...

Choose the book cover that most appeals to you - that makes you want to take the book home and read it right away - by clicking on it. Choose wisely, since you won't be able to choose a different book without refreshing the page.

Excellent choice! 'The Chemist' by Stephenie Meyer is a mystery book with a dominantly white-shade cover! How does the color of this cover compare with other covers of the same genre? Well, we can explore that by using the visualization below.

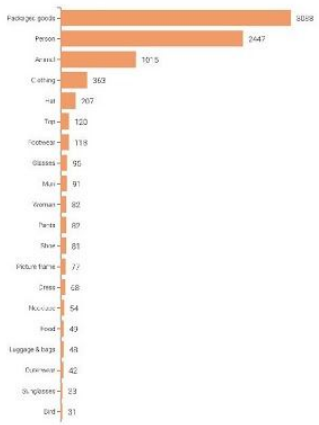
COLOR VIEW

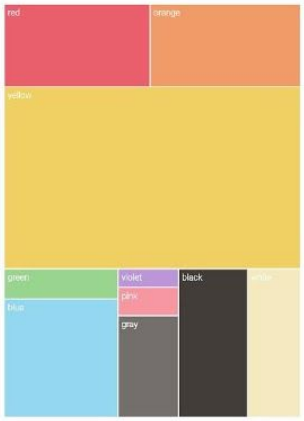
This visualization shows how colors are used in the covers of books of different genres. Each circle represents a different genre, and each bar on that circle represents ... The graph in the center shows how color has changed over time for .... Hover over a bar for more detailed information, and click on a bar to updated the timeline view.

SYMBOL VIEW

Just as important as color, are the symbols that appear on book covers. In this visualization, the bar chart to the left shows the most popular symbols that are used on book covers, grouped by genre. The tree map to the right shows the main color of the books within that genre. Feel free to use the drop-down box to filter by a specific genre.

Chart Data: All





"A Cover Worth 1000 Words" was created by Anastasia Lamothe '21, Lekshmi Santhosh '21, and Isabelle Zheng '22 as the final project for Harvard CS171 2019.

Sources go here with link tags

Future steps:

- treemap composed as a collage of book covers
- tooltip, subcategories, and zoom of treemap, as well as narrowing down genres in select box
- innovated vis - filter by using the colored circle of each genre; displaying extra data on hover of stacked bar chart
- changing opacity on hover in all visualizations to make object being hovered over stand out
- do data testing to make sure that all the data makes sense and that the code is implementing the data correctly, and that dominant color values are accurate

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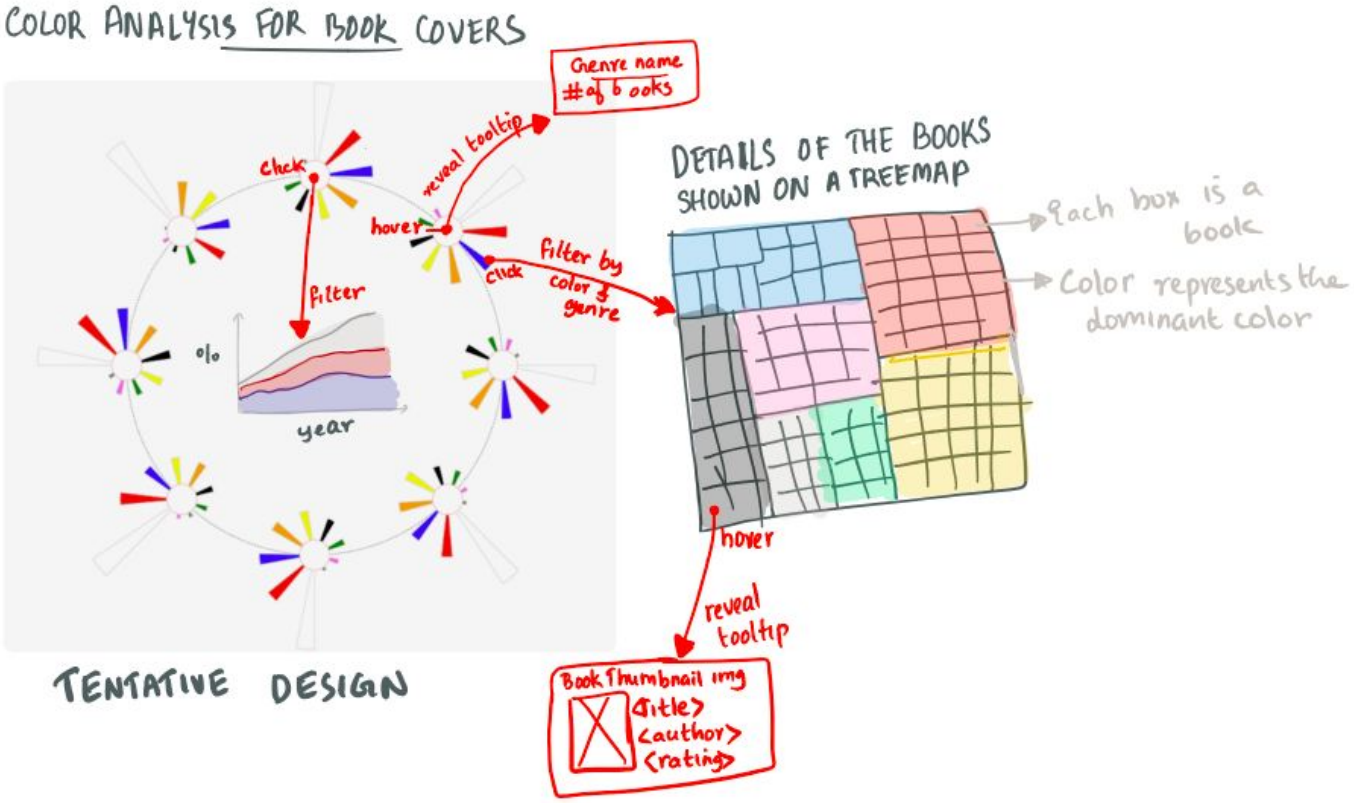
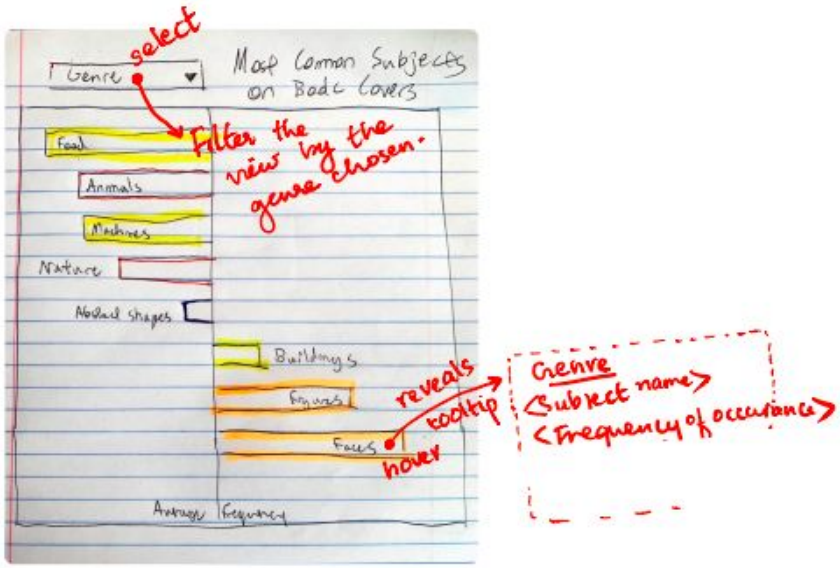
11/17

Updates to the interaction storyboard for the Color view

- We are using popular tags in Goodreads as a proxy for genre
- We assume that the dominant color identification by the Google Vision API is at least 90% accurate. Instead of visualizing all possible shades of color extracted, we are categorizing the color to the colors in the color spectrum alongside white and black. We convert the RGB value to HSV and use the HSV values to determine the broader color. This mapping has to be tested.
- We have two design ideas for the view
    - Encode circles as color and the spokes as genre
    - Replace radial plot with miniature barplots



Interaction storyboard for the Objects Bar plot



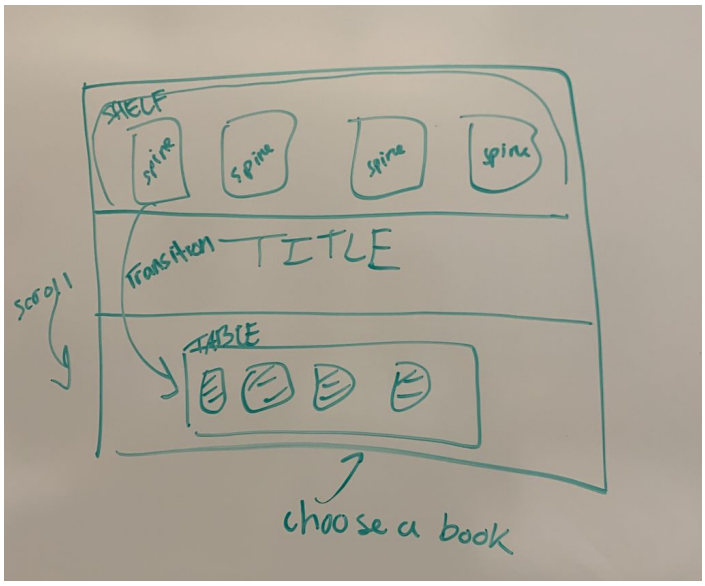
Meeting 3 (11/13):

- Client/audience:
    - Audience is the general public; assume that viewers are not colorblind
    - Could also be used by marketing/ cover designers to figure out which features they should implement
- Specific goals:
    - To provide a visualization tool that allows consumers to better understand the subconscious design details the influence how they purchases books
    - To show trends and patterns of book covers, and to hypothesize what might cause those trends/ patterns
- Interesting questions:
    - Are there certain colors that are more common for certain genres of books?
    - Are there certain types of subjects that are more common for certain genres of books?
    - Do books with covers that have certain characteristics (certain colors, contrast, etc.) get better reviews?
    - Has the distribution of colors on book covers changed over time?
    - Do different countries tend to have different distributions of book cover colors among the best selling books?
    - In general, what tend to be the most common features of book covers?
    - Do certain genres tend to get better reviews? If so, can book cover feature distribution help to explain that?
    - What are possible explanations for the distribution of book cover features?
    - What are the most common objects shown on book covers across all genres?
    - If there are certain types of objects that are more popular than others, then how do specific elements of those objects vary over time (i.e. how

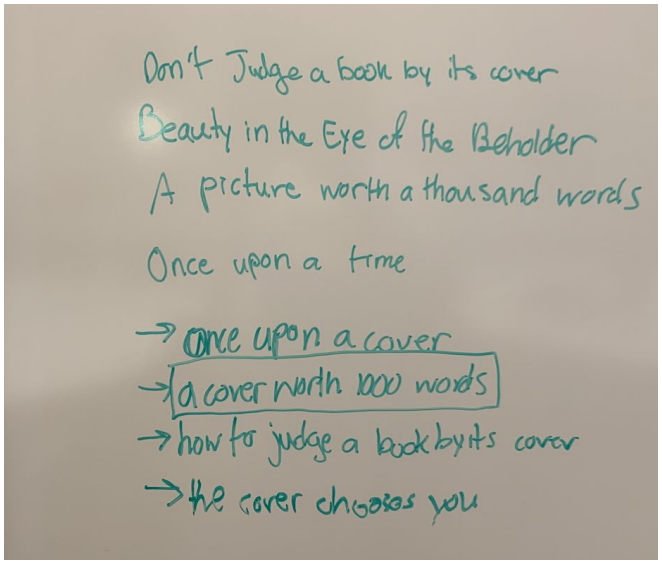
do features apply to symbols themselves as opposed to covers as a whole)?

- https://www.kaggle.com/zygmunt/goodbooks-10k/data
- https://cloud.google.com/vision/docs/detecting-properties
- Need to find genre metadata as well
    - Possibly need larger images?
- Dominant vs. secondary colors, etc.
    - can use dominary color in some visualizations and then on click/ mouse-over have a tooltip/ info box appear with book cover itself
    - use this for any tooltips used
- Custom visualization - probably should not use for quantitative data other than color, could also work for luminance
    - Could also be non-radial plots - might be more readable
- Circle sizes could encode something - otherwise, get rid of the numbers (too many things encoded)
- Do countries differ— any dominant colors above average frequency?
- number of total ratings vs. average rating → aesthetics probably less related to ratings because ratings are typically provided by people who read the book
    - Popularity is more important than rating
    - What colors sell more? Which books are coming off the shelf?
    - Ie. are red books actually better rated or just more likely to sell?
        - disparity between what people buy, and books that people consider to be good
- middle visualization in innovative chart → have area chart show popularity over time?
- data wrangling and cleaning needs to be complete by Sunday && should have some kind of visualization started in d3 (does not need to be completed) → planning on implementing dual bar chart && clear sketches of rest of webpage && pay attention with interactions/ interactive views && storytelling (!!) → some lesson learned, or some new thing that you can point out

- shelf and table in one svg with transitions → image of spine and merge/ transition into image of book cover → does d3 support image?



updated intro interaction → same svg



Project title thought process → **A cover worth a thousand words**

Meeting 2 (11/12):

- Limit scope to only book covers

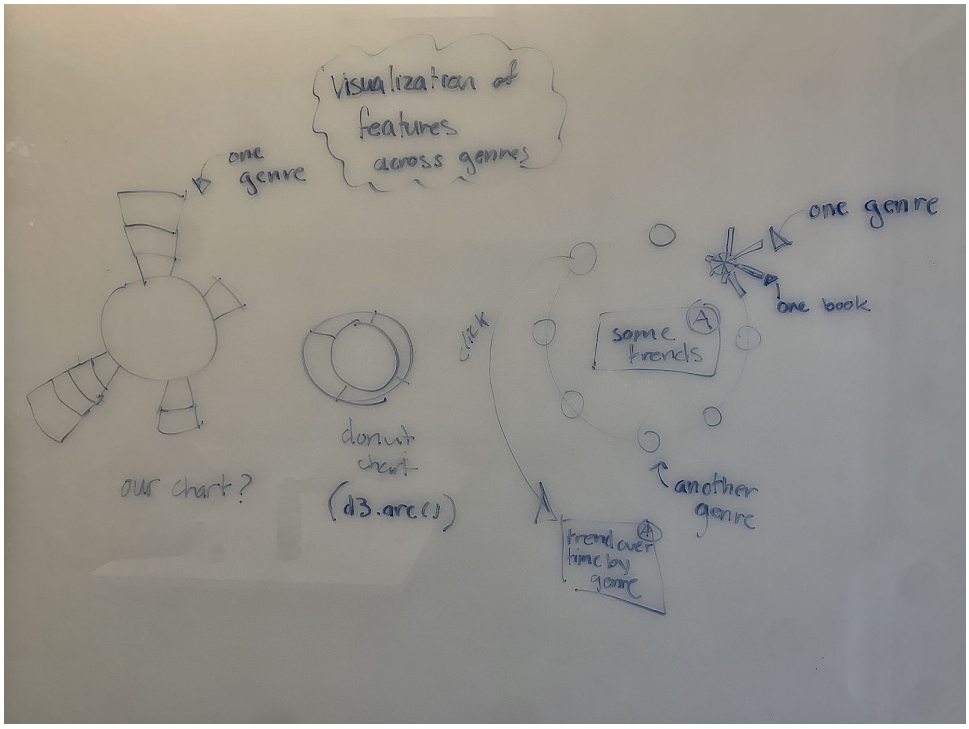
- Limit genres to most common 8 or so
- Lekshmi - starts work on innovative visualization
    - using d3.arch() as a base
- Work on area chart or bar chart (simple) in parallel to get it implemented
- Isabelle - data scraping (associate book covers with metadata, run images through analyzers
    - Most prominent color (RGB/HSL) - Vision API
    - Object types - Vision API
    - background/foreground contrast OR general contrast - convert to greyscale and find difference in brightness

- group colors by broad category e.g. crayola 10-pack colors
- group genres by broad categories

- At the top of the website: show people a couple of books and how we're analyzing them

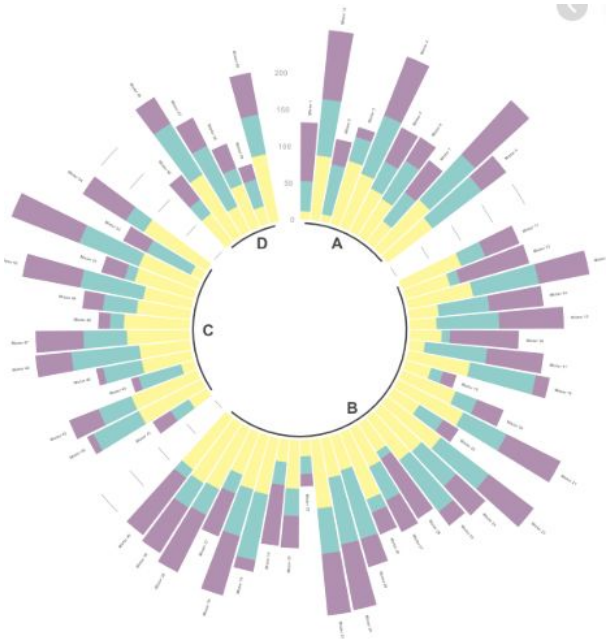
Data scraping and cleaning complete (using the real data sets)	Isabelle
Storytelling clear	Anastasia
First design of an innovative view (using mockup data)	Lekshmi
Interactions (e.g., filtering, brushing, etc.) have to be designed (either in an interaction storyboard, or in a textual description and some sketches)	Lekshmi (4th interaction storyboard)
At least one D3 visualization already partly implemented, and drafts for 2 more visualizations	Bar chart - Isabelle Area chart - Isabelle Treemap - Hold off on

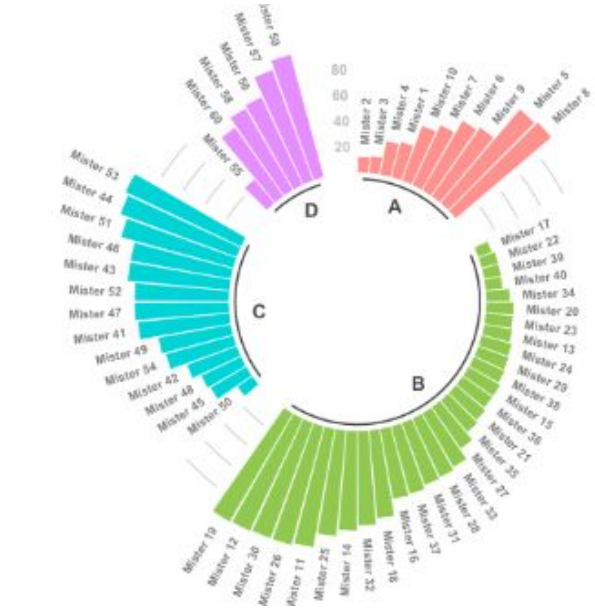
Rough webpage design and structure has to be done and implemented (placeholders for visualizations, text and images allowed)	Anastasia

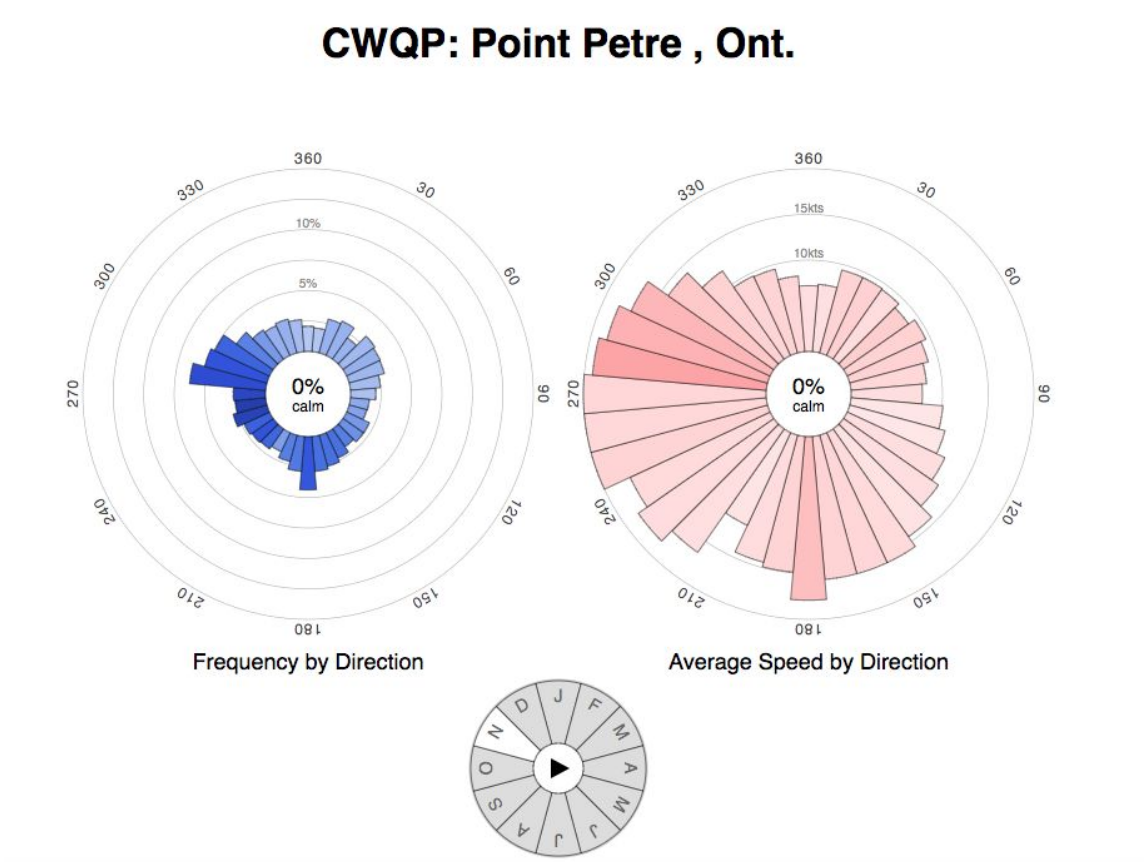


Innovative view sketch (circular bar chart)

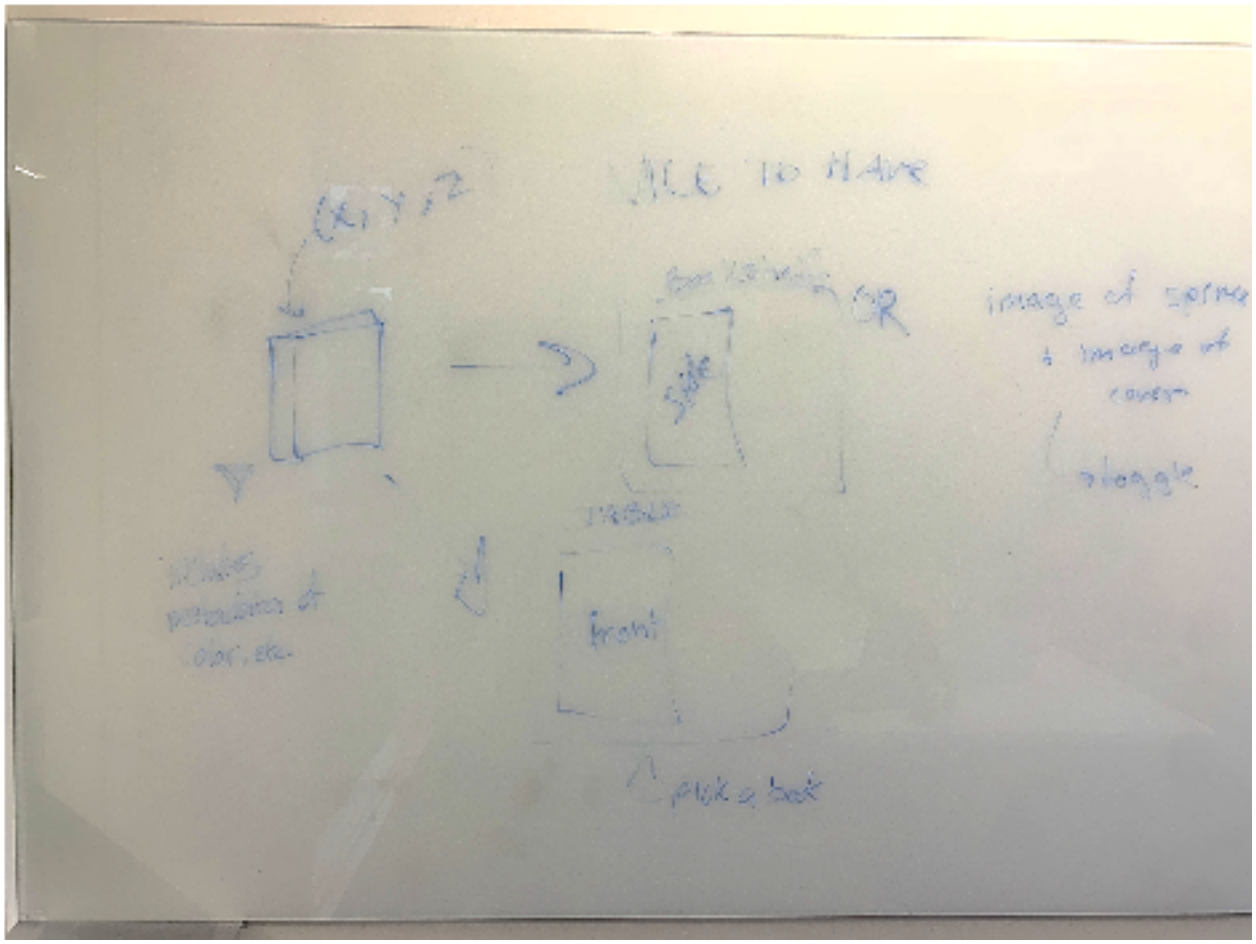
Inspiration

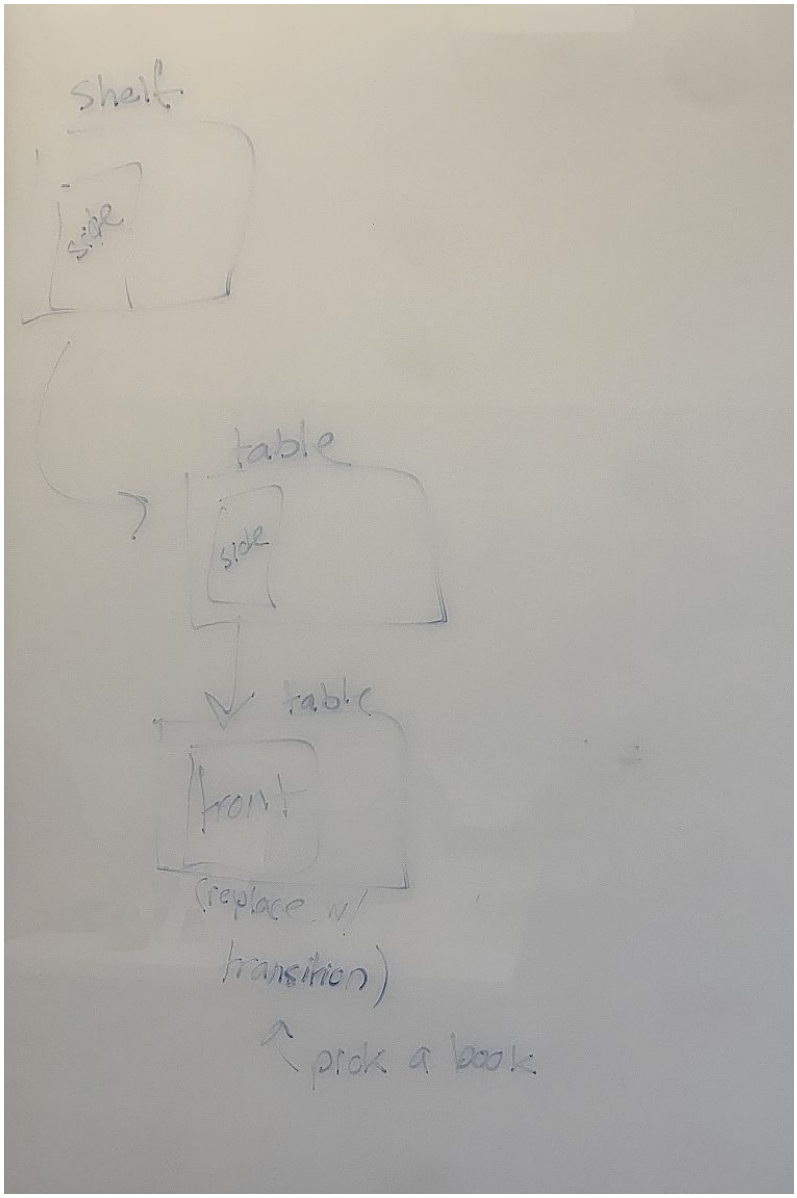

A
B
C
D


A
B
C
D



Sketches for hook (transition books for user selection)


ALL TO HAVE
(x, y, z)
OR
image of spine
+ image of cover
toggle
front
pick a book



Meeting 1 11/8:

Possible datasets:

- Goodread books: https://github.com/zygmuntz/goodbooks-10k
- Book covers API: https://openlibrary.org/dev/docs/api/covers
- MoMA collection: https://github.com/MuseumofModernArt/collection
- Movie posters: https://www.cinematerial.com/, https://theposterdb.com/, http://www.impawards.com/

- Amazon reviews: https://nijianmo.github.io/amazon/index.html
- Logos: https://data.vision.ee.ethz.ch/sagea/lld/

Insights from images: https://cloud.google.com/vision/
Aesthetic Analysis: https://github.com/aimerykong/deepImageAestheticsAnalysis
Color summarizer: http://mkweb.bcgsc.ca/color-summarizer/?api

Attributes:

- Contrast
- Color
    - Hue
    - Luminance
- Typography
- Composition
    - Foreground and background
    - Perspective
- Size
- Subject - People? Vs. Objects? Landscapes?
- Title (Words

Analyze:

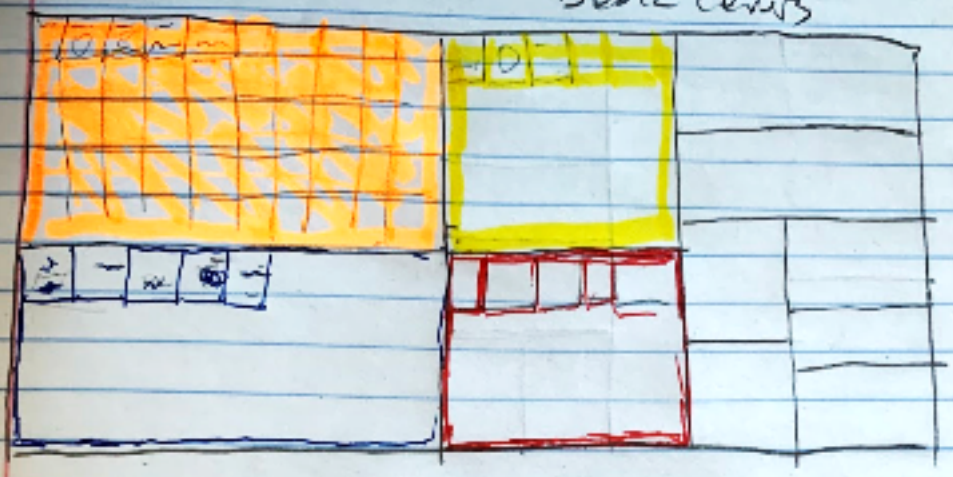
- Genre
- Rating
- Frequency
- Country of origin
- Year of release

- book rack —> select book you noticed first/ that you think is most appealing
- amazon page —> most popular page
- multiple categories, and seeing what's most popular per category
    - Start with looking at one category and building visualizations for that
- joining data: joining with Tableau (or Python?) merge data sets (for books) based off of ISBN number

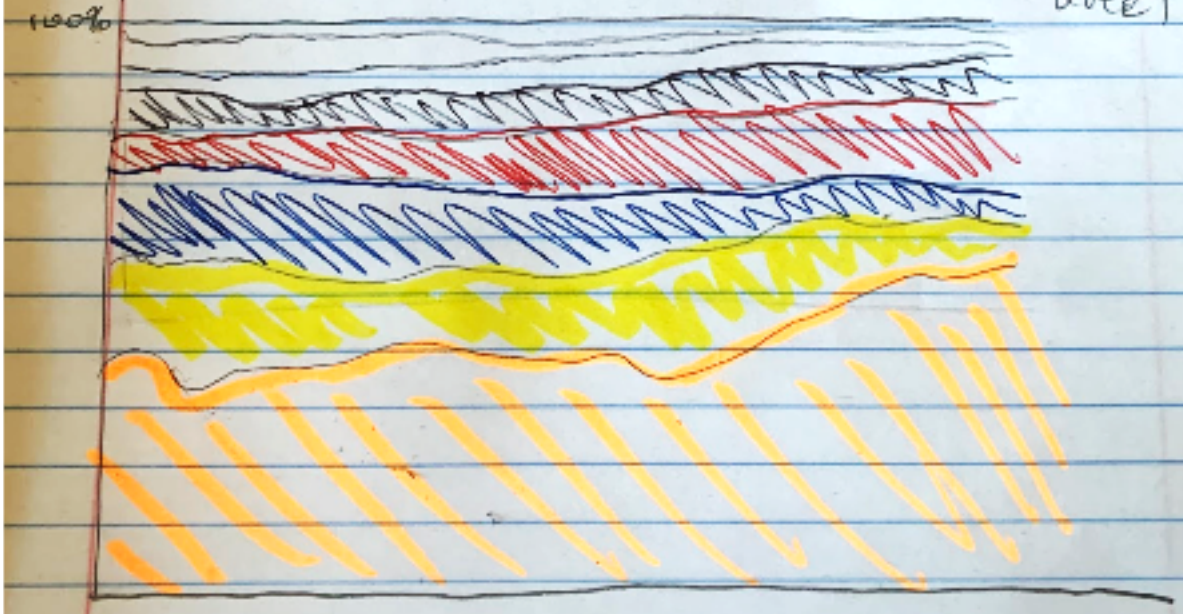
Sketches

Genre

Distribution of colors in Book Covers

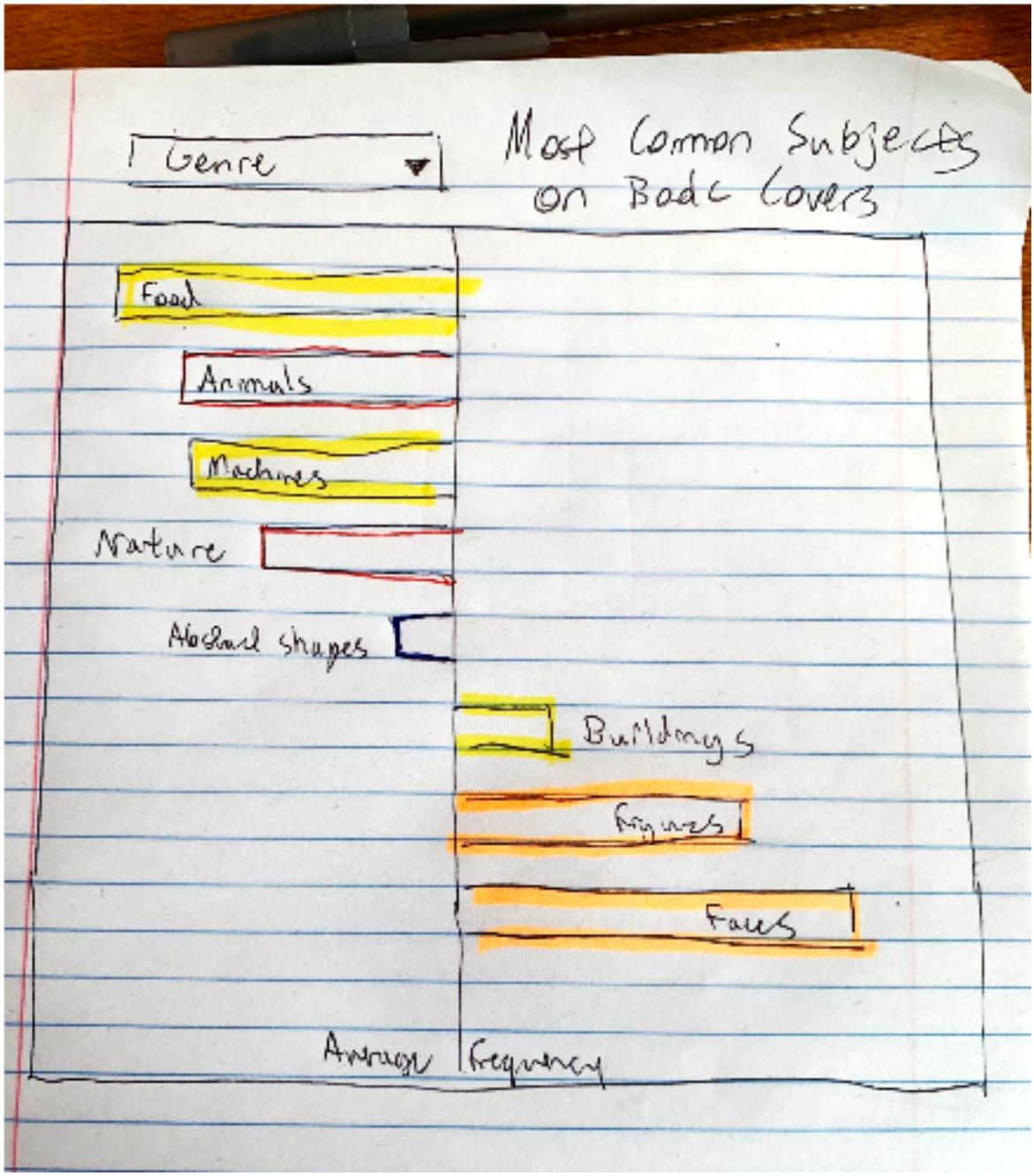


Distribution of colors in Best selling Book Covers. over time (by publication date)



1450

2020


Genre
Most Common Subjects on Book Covers
Food
Animals
Machines
Nature
Abstract shapes
Buildings
Figures
Faces
Average Frequency

CHOOSE THE AESTHETIC CATEGORY

↳ color
↳ Title typography
↳ Contrast b/w bg & fg
↳ Title text
↳ Book print size

HOW TO INTERPRET THE GRAPH

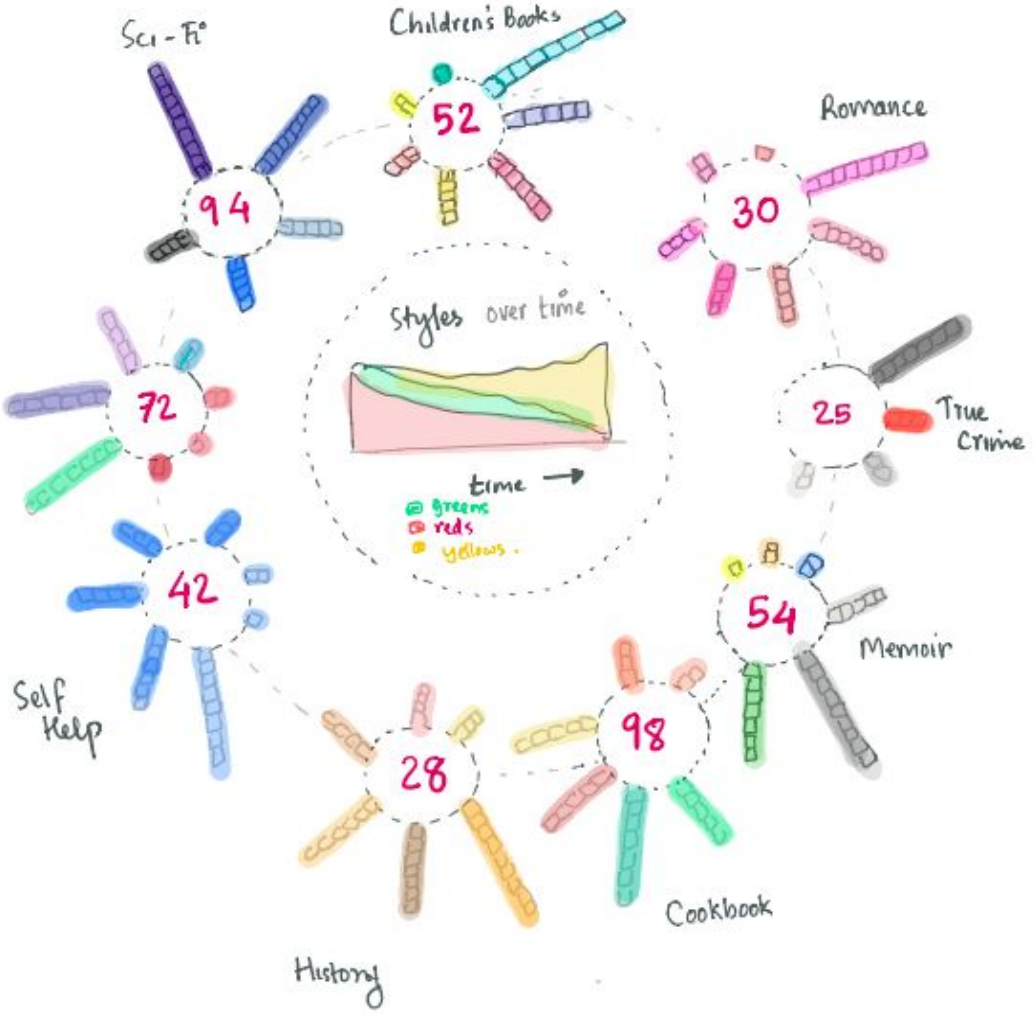
Children's Books
52

Height of the bar represents count within a category

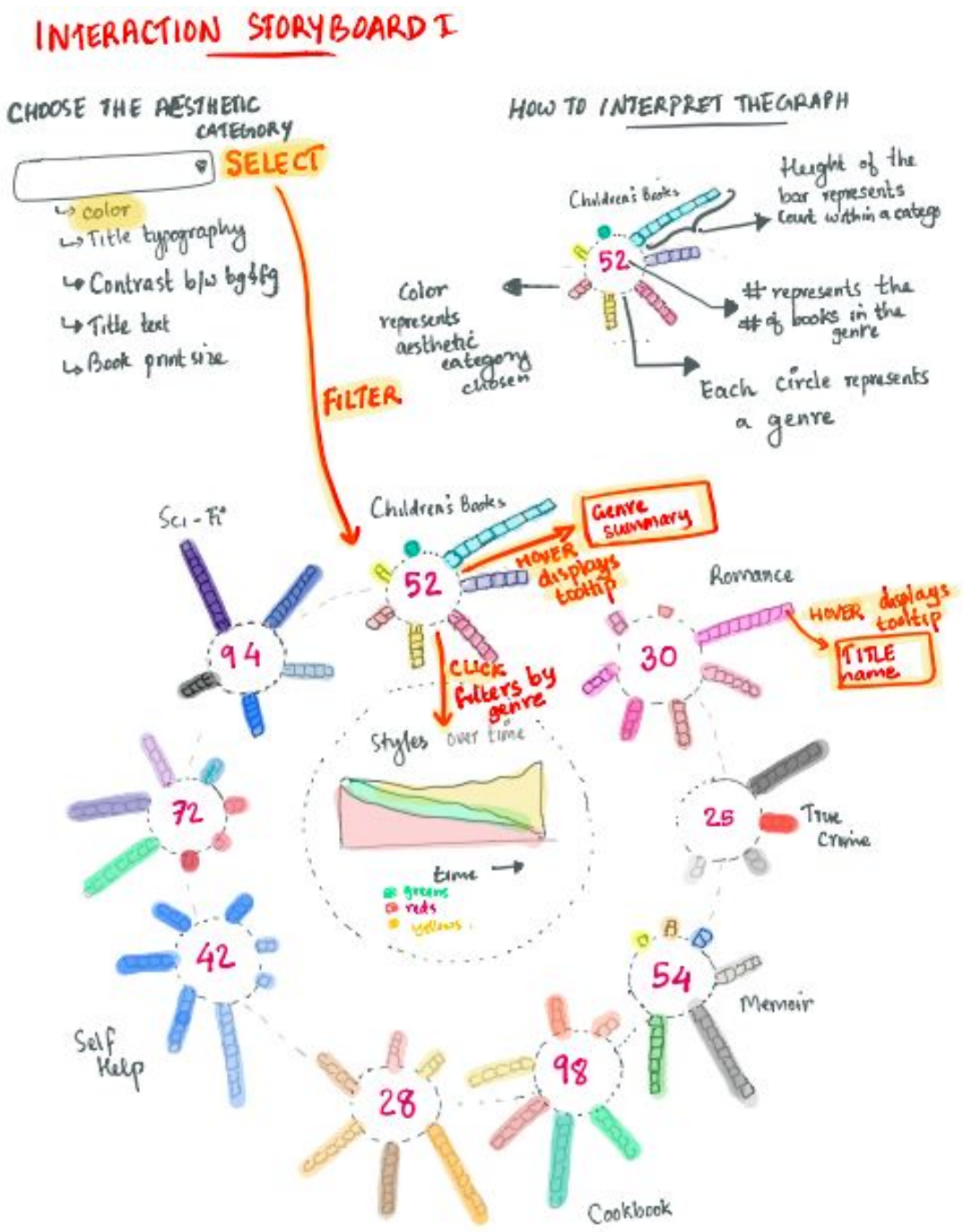
Color represents aesthetic category chosen

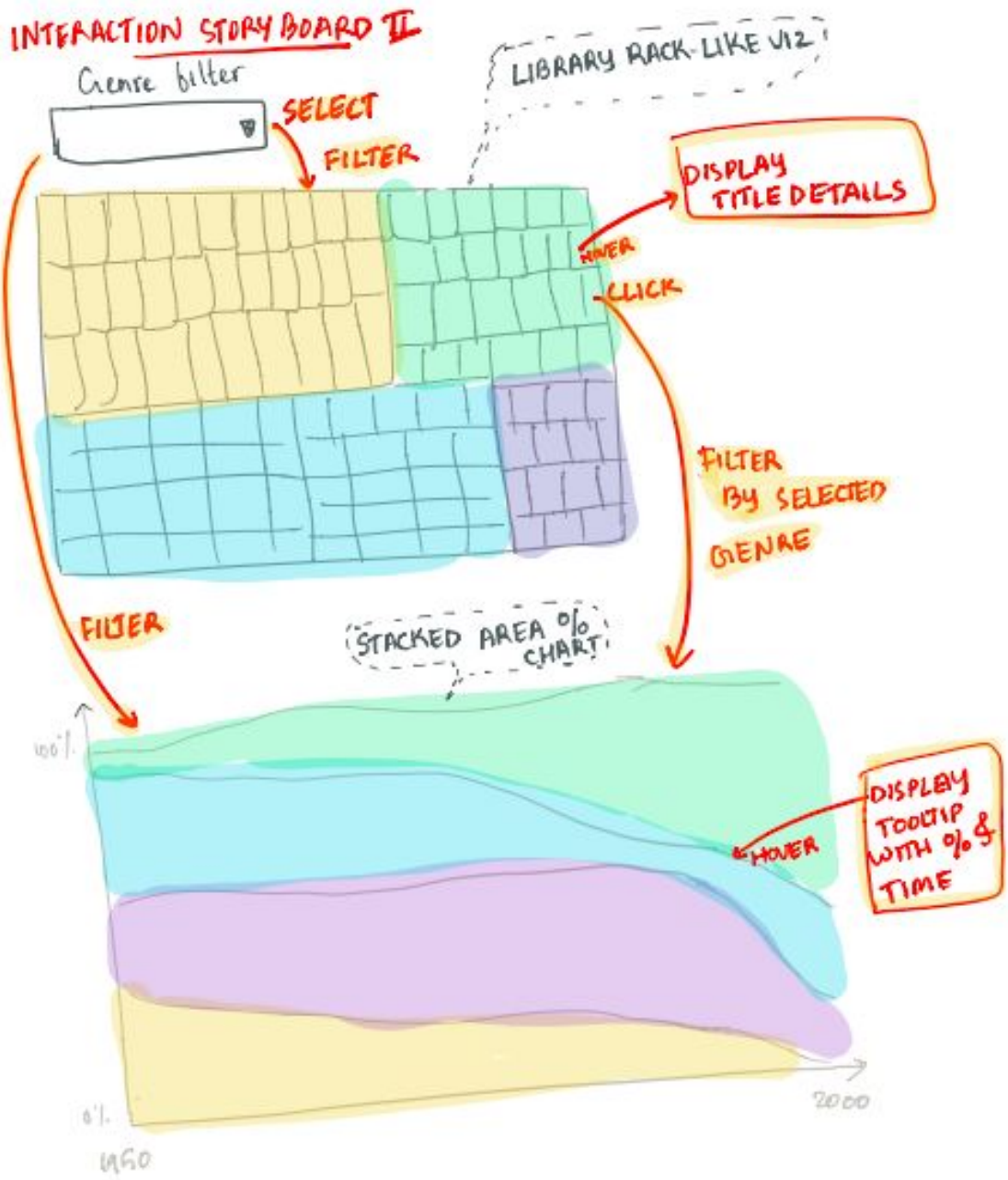
represents the # of books in the genre

Each circle represents a genre



Interaction Storyboards:





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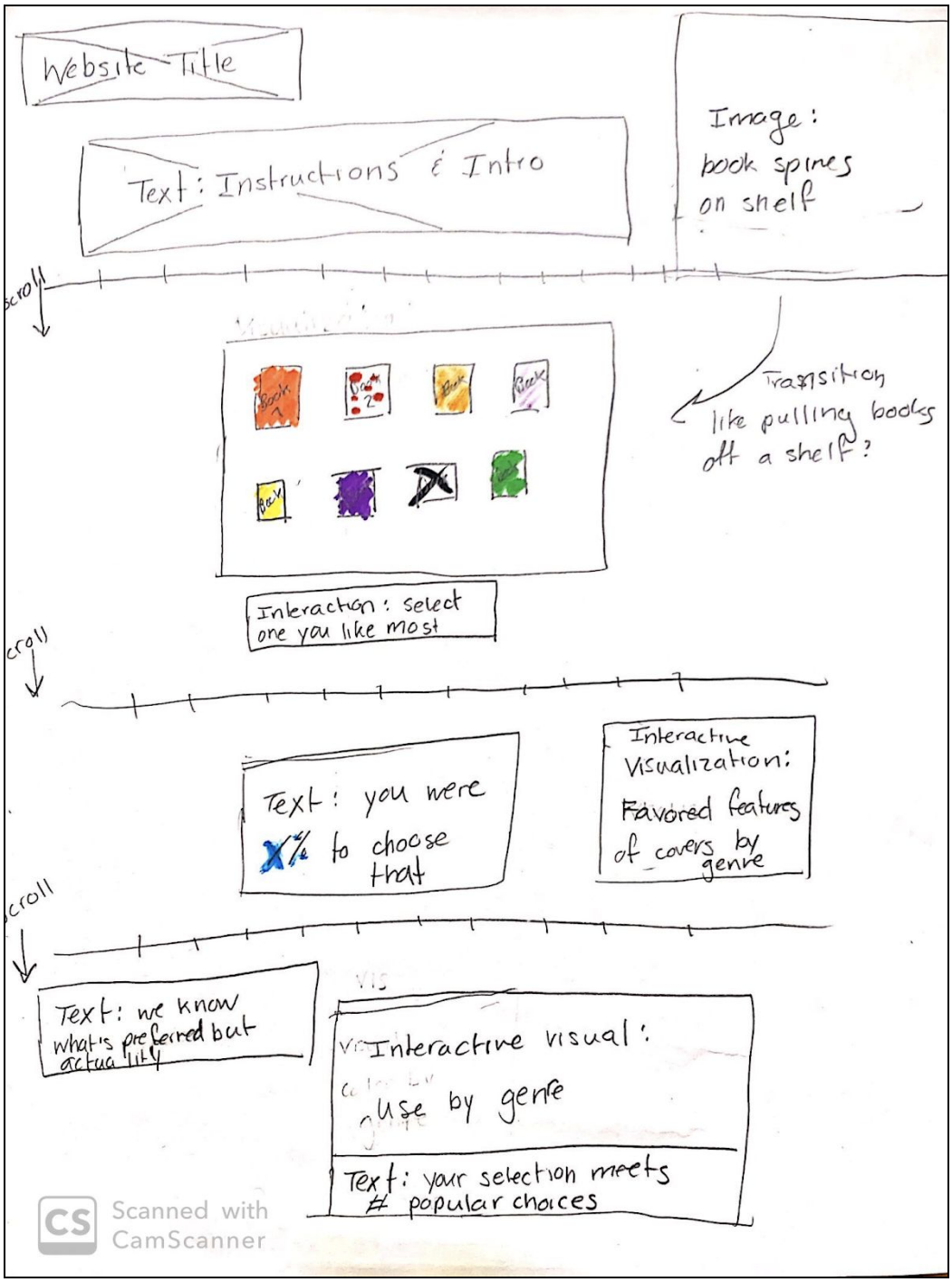
Website Layout:


Website Title
Text: Instructions & Intro
Image: book spines on shelf
scroll
Transition like pulling books off a shelf?
Interaction: select one you like most
scroll
Text: you were X% to choose that
Interactive Visualization: Favored features of covers by genre
scroll
Text: we know what's preferred but actually
Interactive visual: use by genre
Text: your selection meets # popular choices
Scanned with CamScanner