Michael Freeman

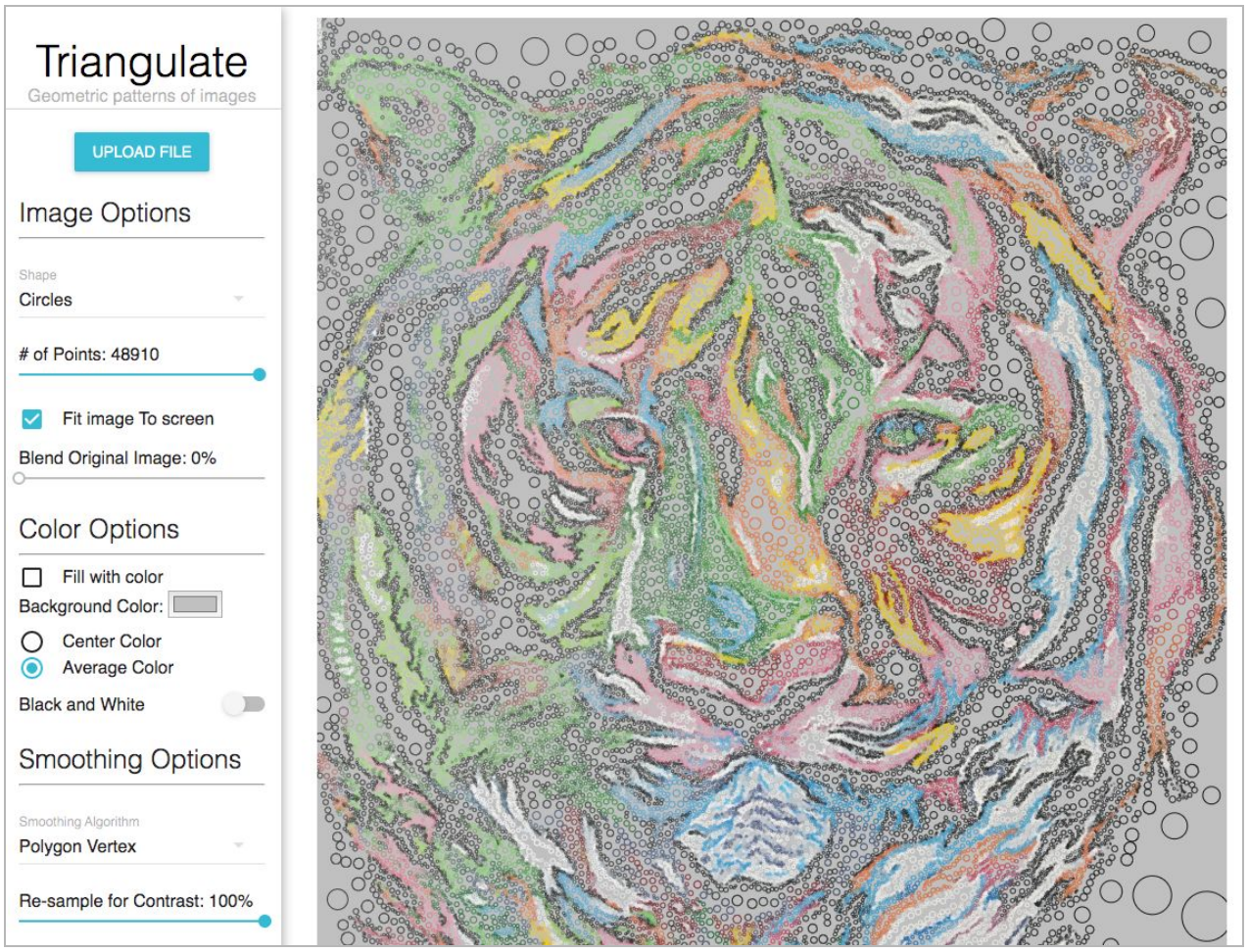
Generative and Data Artist

I use various programming techniques to create art in the form of **generative art software**, **data visualizations**, and **laser engravings**. I use geometric abstractions to uncover and convey meaning in images and data sets.

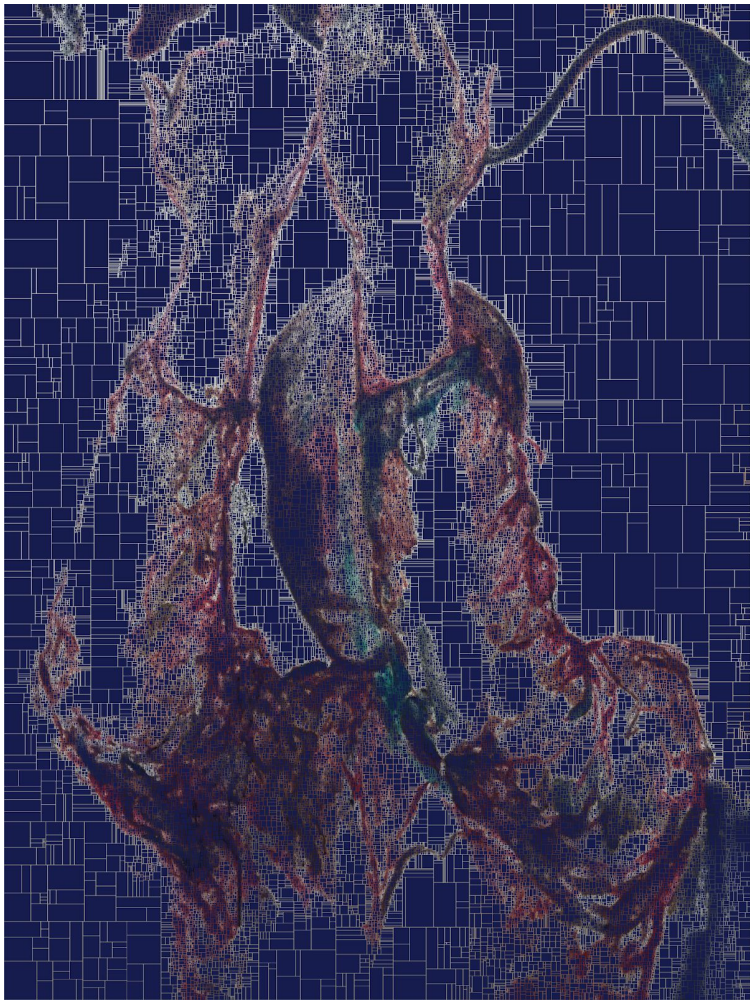
Software

Triangulate: Generative Art from Images

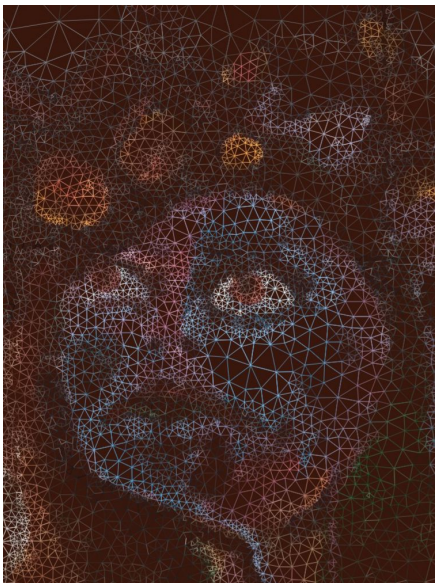
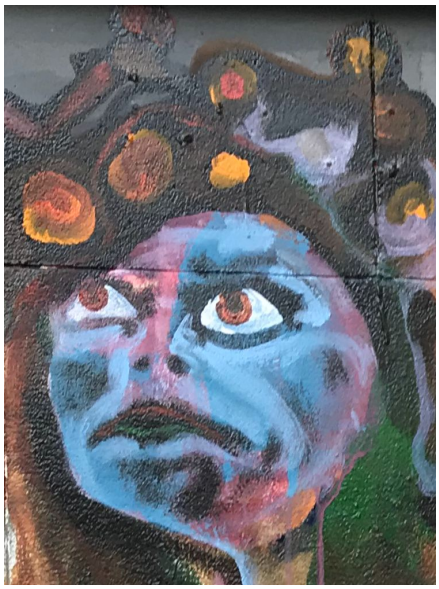
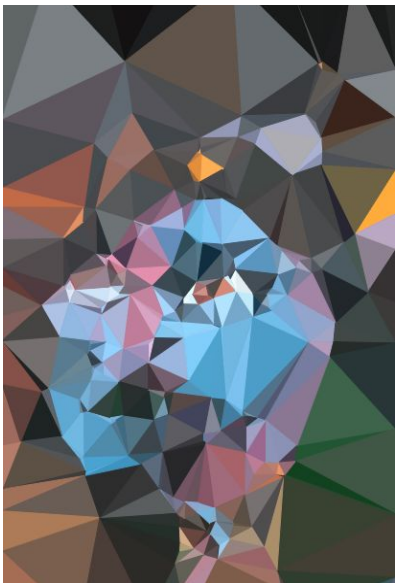
The Triangulate tool is a web application that creates data-driven representations of images uploaded by users. Its primary aims are to: *reduce image complexity* to the underlying color palettes, *expose color contrast* in the image which may not be readily apparent, and *redraw the image* using only simple lines or circles.



Manipulating a photo using the Triangulate application



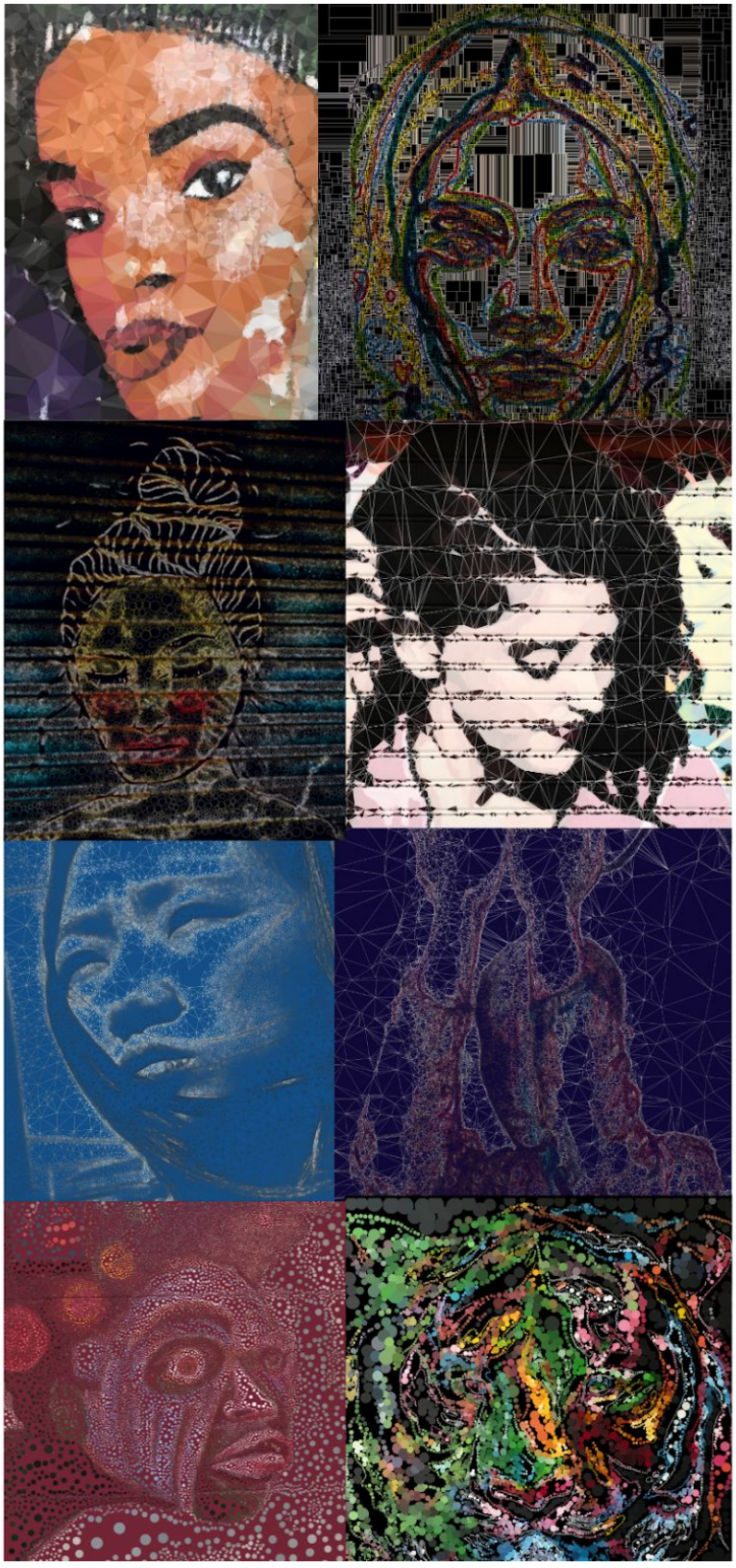

Using only lines to redraw an image (left), and original painting by Desi Civera (right)

Increased complexity (left) and color pallete reduction (right) of anonymous graffiti (center)

Faces of Madrid

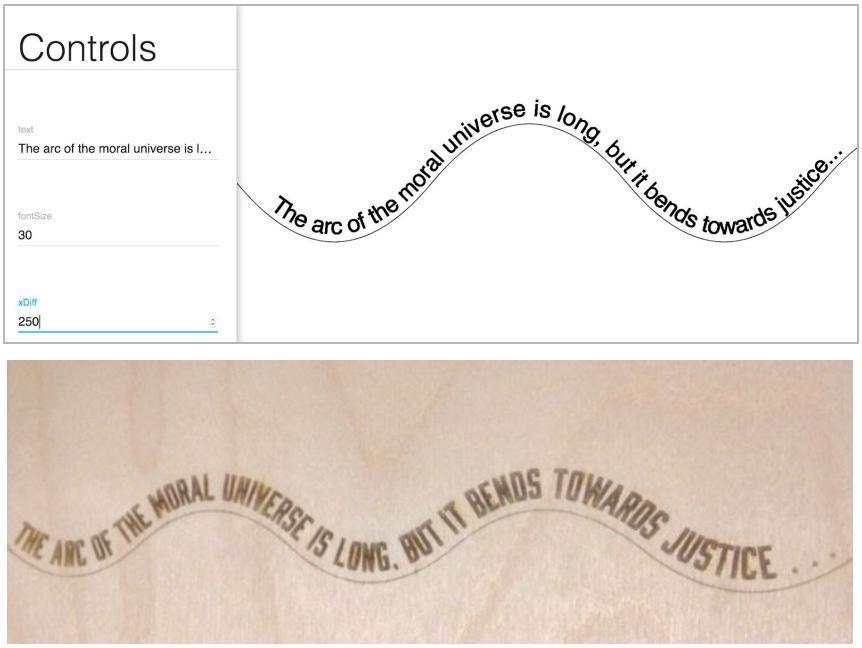
I'm currently using the Triangulate software to compile a series based on graffiti around Madrid. I started the project with the intention of exploring the city, paying particular attention to the plethora of public art. Once I began collecting photographs of street art, the variety of facial expression emerged as an interesting theme to explore. This (ongoing) project seeks to expose both the variation and similarity in the colors and contrasts in facial features and expressions. By amplifying areas in contrast in the images, facial expressions are often amplified and enhanced (an unexpected outcome of the project).



Ongoing collection: Faces of Madrid

Text-Arc: Bending Text along Paths

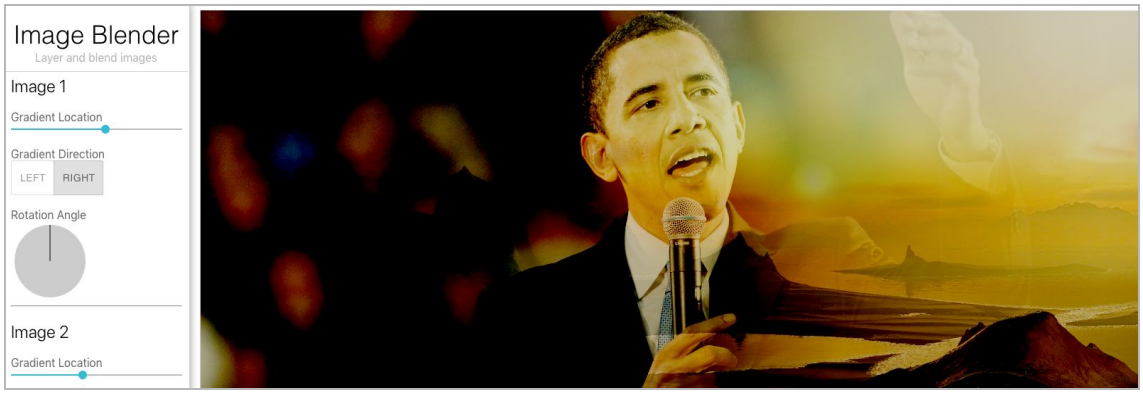
The text arc application is a simple tool that allows users to generate an image of text along a curve. It was built to capture the idea of *bending* for a laser engraving of the quote below. Controls are provided to augment the amplitude, angle, and direction of the curve.



Projecting text along a path in the text-arc tool,
along with laser engraving (quote from Martin Luther King Jr.)

Image-Blender: A tool for Layering Images

I built a basic image blending tool to allow the creation of novel images using different techniques for combining the colors at each pixel. By applying gradients to layers of draggable images, users are able to combine their images into new (and often surprising) representations.

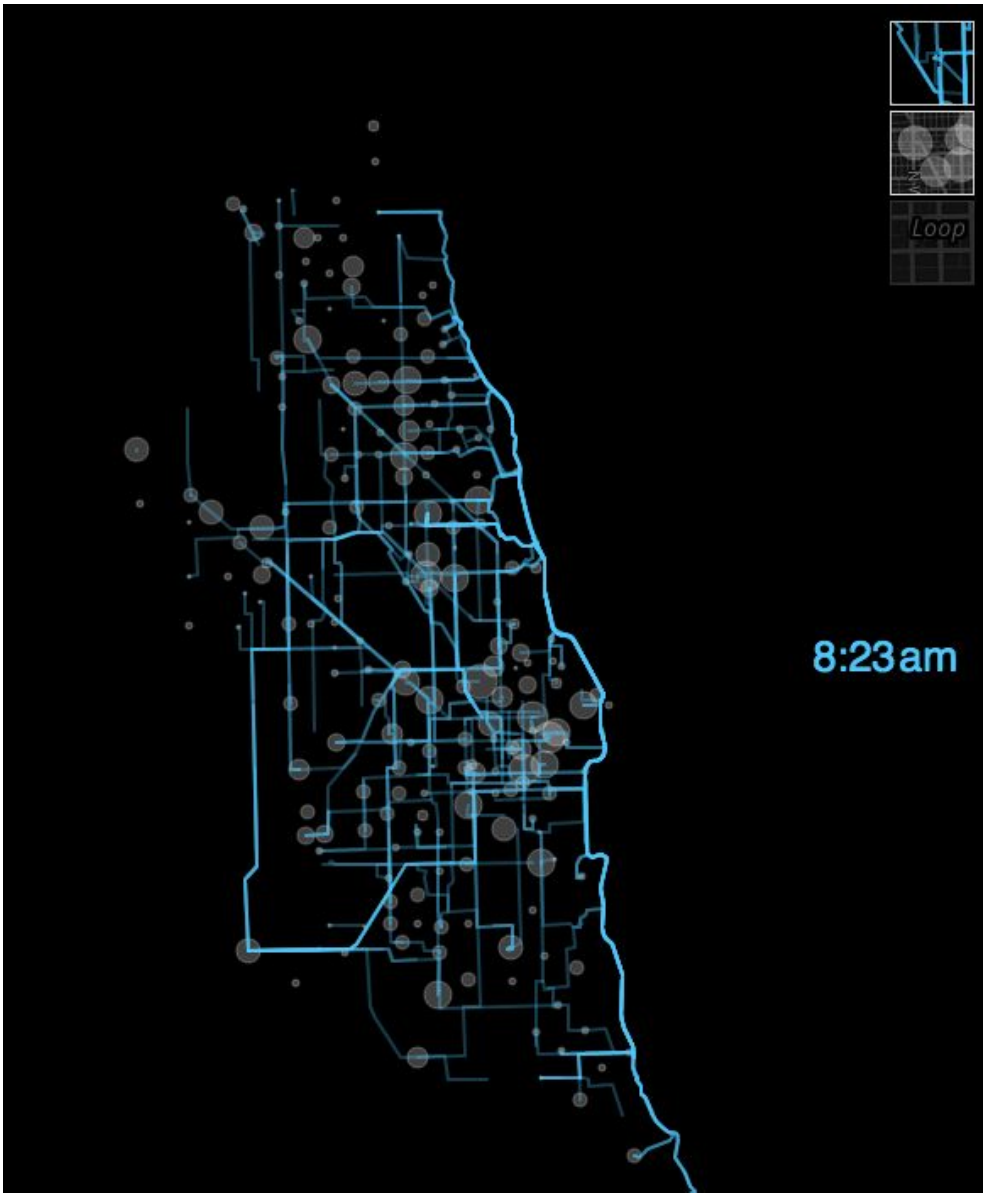


Blending and layering images: images available on PixaBay (Obama, Landscape)

Data Visualizations

Bikers Illuminating Chicago

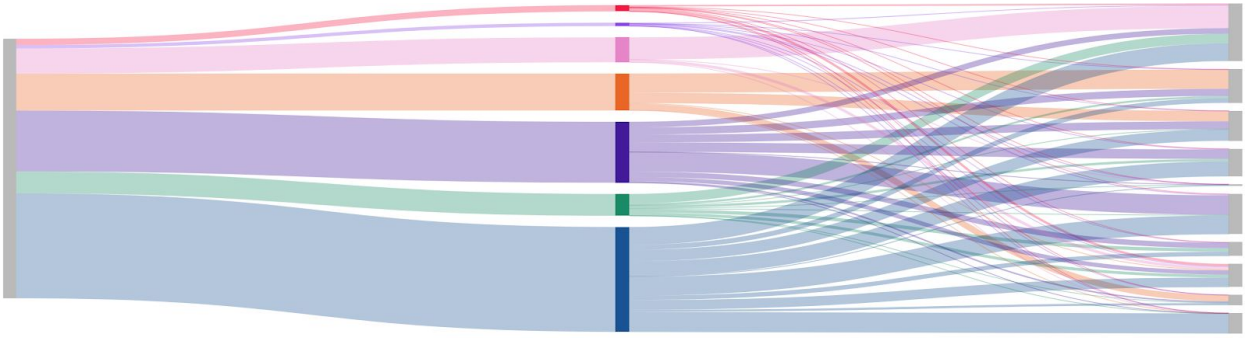
The DivvyTrips project explores what the city of Chicago looks like as drawn by the bikers passing through it. A timelapse effect of bikers *lighting up* the city creates the sensations of the city coming to life, crawling with bikers, and resting at night. The project, which was awarded **Most Beautiful Data Visualization** in a competition hosted by the bike sharing company Divvy, animates the (estimated) paths that bikers take throughout the day.



Bikers' paths (blue) between docking stations (gray) in Chicago

Tracing Economic Flows

I designed and built this interactive data visualization to explore and express the complexity in global health funding. The network of financial flows exposes the complexity of the health system, and provides interactivity that allows for the investigation of how money travels from each originating source, through particular channeling bodies, to targeted health focus areas.



Volume of money flowing from a single source (left), through various channels (center), to different health focus areas (right)

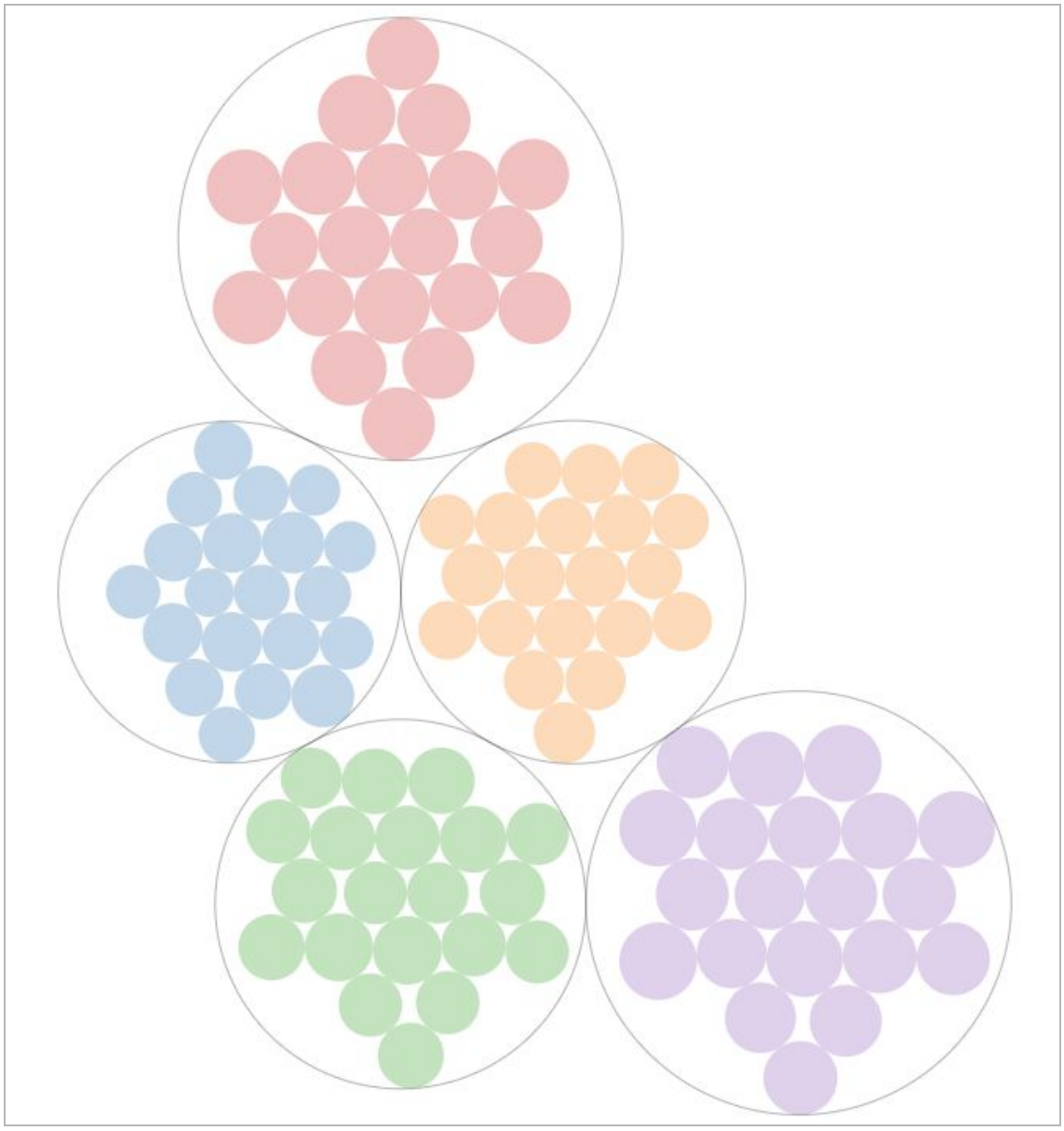
Smoking Around the Globe

After working as a researcher on smoking prevalence around the globe, I created this visualization to accompany our published results. Using a series of interactive graphics, the tools exposes trends and variations in smoking rates around the world.

Smokers in each country (outer-ring), region (middle ring), and super-region (inner-ring)

Hierarchical Modeling

This project is a visual explanation of the statistical concept of hierarchical modeling. Using a series of animated transitions, viewers are introduced to foundational ideas necessary to understand this particular modeling technique. The project is frequently used as a teaching tool at Universities, and has been visited by **over 40,000 users**. I believe it is the artistic qualities — attention to aesthetic details, carefully animated transitions — that has made a challenging concept more approachable by students. I've created similar explanations of the Central Limit Theorem, and performance metrics for statistical models.

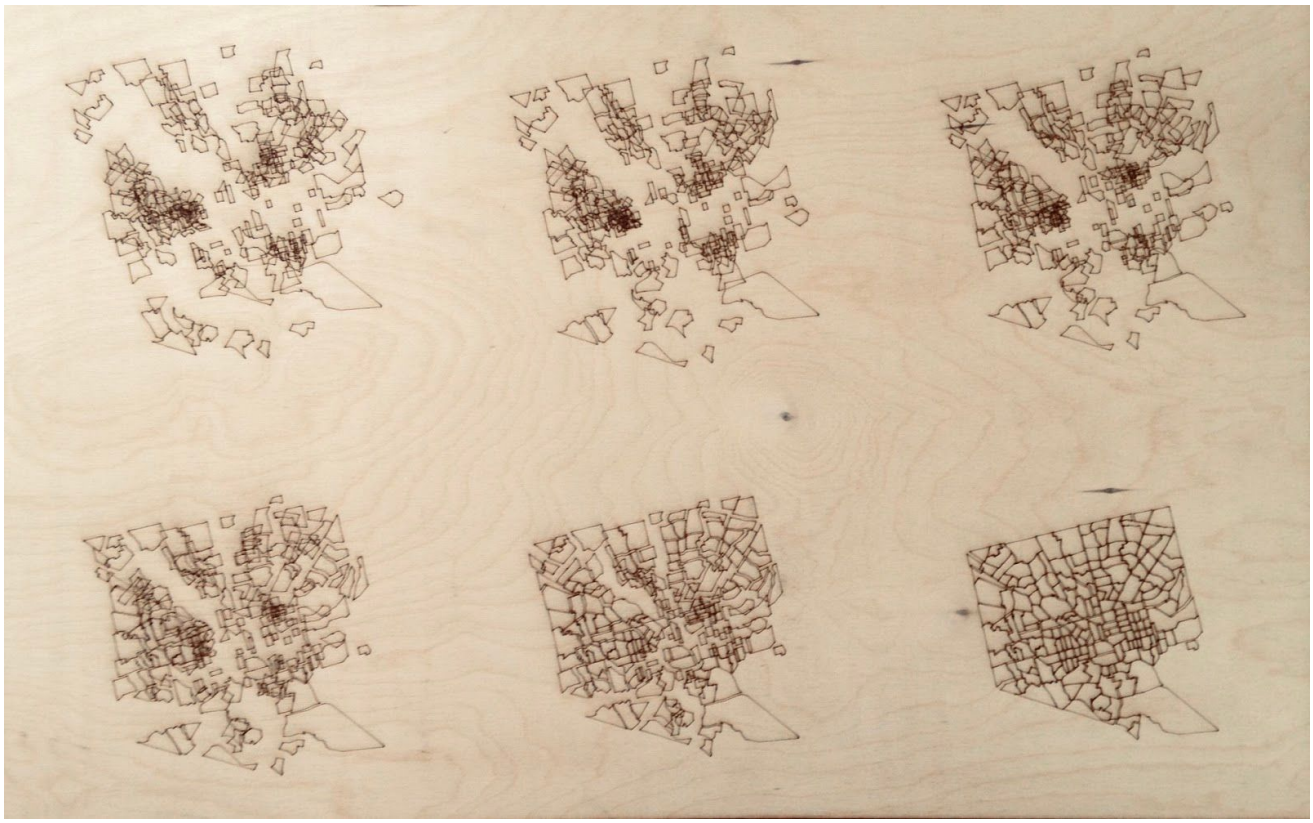


A hierarchical or "nested" data structure that can be statistically modeled

Laser Engravings

Racial Fracturing

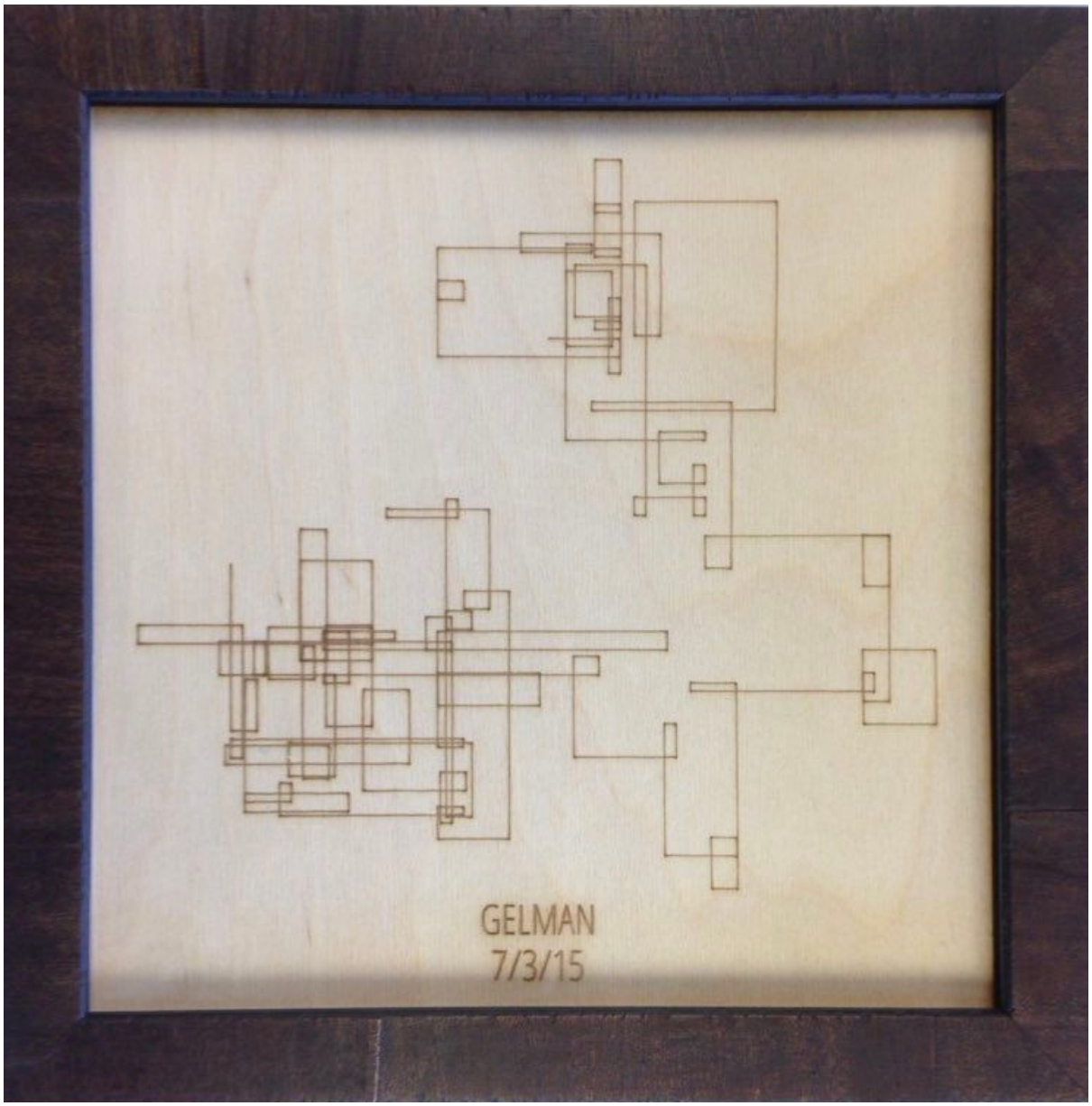
This piece features six renderings of Baltimore's census tracts, each distorted — to a different degree — based on the differences in racial composition amongst adjacent tracts. Read from top-left to bottom-right, the piece imagines the reunification of a fractured city. Based on a digital project by Jim Vallandingham, adjacent tracts with different racial compositions are pushed apart, while tracts with similar demographics are drawn towards each other. Each layout is drawn using different degrees of attraction/repulsion in a physics simulation.



The city of Baltimore, fragmented by racial segregation, and re-unified

Patterns in Promises

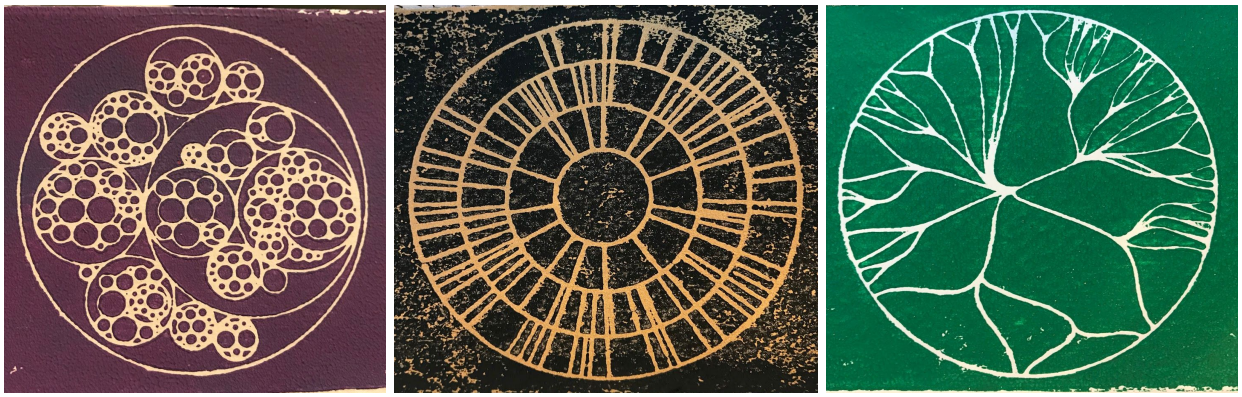
Inspired by designer Stefanie Posavec, I created this artistic rendering of a friend's wedding vows. It captures the variation in the types of promises we make to each other: some are lengthy and uninterrupted, while others come in frenetic bursts. It was drawn using a simple algorithm: for each sentence in their vows, it draws a line of proportionate length, and then turns 90 degrees to the right before drawing the following line.



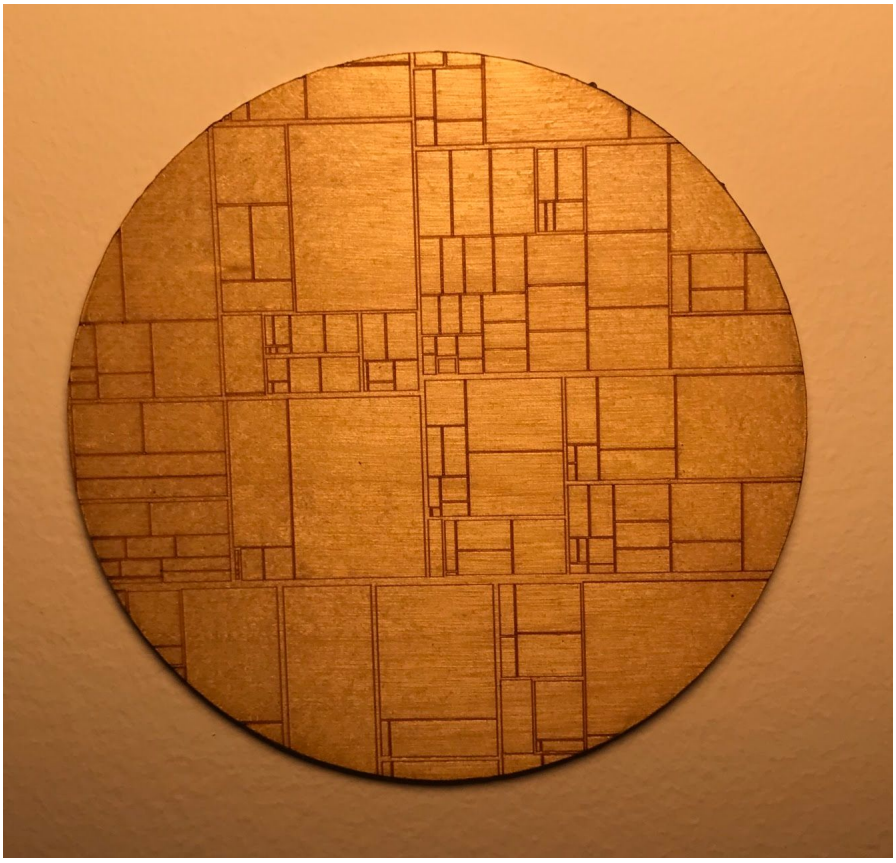
Patterns in promises: wedding vows, abstractly rendered using the algorithm described above

Experimental Mediums: Data Stamps and Coasters

To experiment with bringing data art into physical forms, I created a series of stamps and coasters based on my own visualization work (as well as some popular open-source projects). All pieces are developed first on the web, then fed into a laser cutter appropriately configured to make engravings or etchings.



Hand-pressed data cards (made with laser engraved stamps)



Data coasters (one of a series of 5)