ILLINOIS: VISUALIZING MUSIC

by

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When faced with the prospect of coming up with an idea for my senior project, I was, at first, stumped. I searched endless blogs, websites and magazines for inspiration, and in the process developed an unexpected love of information graphics. I had many extremely different ideas, but one theme that always resurfaced was music. Music has always had a huge influence on me, and I've tried to incorporate it in as many assignments as possible throughout my time at Purchase. The night before the proposal was due, after reading all 166 pages of an infographics blog, I decided to combine music and infographics, at which point the question went from being "what?" to "how?"

As the beginning of senior year began, "how?" became less an issue of execution and more an issue of refining the idea. My original idea was so broad, I didn't know where to start. My very first brainstorming notes were all over the place, spanning every conceivable aspect of music there was to cover. My first plan was to create four posters: The first two would take a micro look at music, one in a personal way, another in an impersonal way. The last two would take a macro look at music, one in a personal way and the other in an impersonal way. I came up with a variety of ideas for each of the four posters, but the problem was how to make the subjects of these posters not seem completely random, as the grand theme of music was the only thing connecting them. During my first senior project meeting, the thought came up that maybe I should focus on a specific artist, album or song to base everything off of so as to be more cohesive. It took about two seconds to decide what I wanted to do.

Illinois, duh.

The album *Illinois*, by Sufjan Stevens was released in July 2005 as the second album in a planned series of 50 albums, each based on a different U.S. state. It consists of 22 tracks, 13 of which have lyrics, and has a very unique, eclectic and unclassifiable sound. It is thoroughly researched and thick with references to various locations and icons in Illinois history as well as personal references, as Stevens lived in the state for a time. I bought *Illinois* soon after it was released, and listened to it in the car on the way to my freshman year at Purchase in August 2005. It has been my favorite album since then and has become the soundtrack to my college experience.

Before I began, I looked to other visual artists who have worked with music, as well as designers who have created unusual infographics on a variety of subjects. One infographic that I kept coming across was the Feltron Report. At the end of every year, graphic designer Nicholas Felton creates an annual report of his life, what he calls "an exhaustive compendium of travel and activity." In the music section of the report, he goes into detail about his listening history in the past year, including tracks played, artists played, songs played by week, genre distribution and more. Listening history is also something Lee Byron worked with when creating a series of posters (1) based on statistics generated by the website Last.fm. This tracks many users of the website, and shows how their listening habits changed over a span of 18 months. Other projects dealt with song structure in unusual ways, such as the Shape of Song project by Martin Wattenberg (4, 5, 6). This diagramed the structure of a song by using a line of music and connecting the parts that repeated using colored arches, revealing how simple or complex a song is. I also bought an inspirational book called *Data Flow*, which was filled with new and unique ways of visualizing different types of information. One of the more relevant projects in the book is called *On the Map* (3, 4) designed by Stefanie Posavec. The project focused on Jack Kerouac's book, *On the Road*, and it mapped out literary patterns including sentence length, themes, and rhythm.
I began my project with the most quantifiable aspect of the music, the lyrics. Using the lyrics in the CD booklet, I went through every song noting every time a phrase or chorus was repeated. I found a word counter online and ran every song through the program to get the number of times each word was used. Then for every song I created a map of my results in the form of circles of different thicknesses. I began with a single one inch one-point concentric circle to represent a word that was used only once in a song. For every other word that was used once, I added another one-point circle. I then switched to a two-point concentric circle of a slightly different color to represent each word that was used twice. I continued doing this for every word of every song until I had 13 different groups of circles, one group for every song with lyrics. I chose the colors based on what I thought went well with the song and what represented the mood of the song best. It was very interesting to see the range of images I was able to get out of this simple procedure—small circles resulted from songs with fewer lyrics, and thicker outer circles resulted from songs with more repetition, for example. I also included a list of all the words below each circle and what color they corresponded to in order to give meaning to these images.
the and you in i when your he my on morning of glory that with at night out to takes window took what lord but tucked found me father untied his has kissed our shade we face house complications floor stone 4-h touched telephone drove light living cancer follow over bone divide hung hits winter michael's scared it where pressed reading thought almost bathroom pray march head sorry tuesday card

Casimir Pulaski Day
For the next piece, I decided to continue with lyrics, but focus on the content of them as opposed to single word usage. I went through the lyrics and came up with 11 categories that all the lyrics fit into: allegory, celebration, death, freedom, history, Illinois, love, personal history, reflection, religion, and sadness. I assigned each category a color and then went through the lyrics and color coded each line to represent its subject. Then, I counted the number of letters in each line, and created a bar of color for each line, and the length of each bar corresponded to how many letters the line contained (version 1). I decided I didn’t like the results, so I combined all the songs into one document, rotated and aligned the bars and made them thinner as well (version 2). It stayed this way for a while until the whole project was coming together at the very end, and I reevaluated the purpose of this piece. I realized I did not have any instance where the lyrics were presented in their unaltered form, which I thought was necessary in the context of the exhibition, where lyrics are referred to multiple times. So I made the lines even thinner, rotated them again, and extended each of them out to connect to the lyric it represented (final version). This served as an introduction to the exhibition and a reference point to the vocal album grid piece that has the same color coding.
All things know. All things know
(I made a lot of mistakes)
You had to find it
(I made a lot of mistakes)
All things go. All things go
(I made a lot of mistakes)
Goldendell and the 47th men
The things I brought you
When I found out you had cancer of the bone
Your father cried on the telephone
And he drove his car to the Navy Yard
Just to prove that he was sorry
In the morning, through the window shade
When the light powered up
against your shoulder blade
I could see what you were reading
All the glory that the Lord has made
And the complications you could do without
When he kissed you on the mouth
Tuesday night at the Bible study
We left our hands and prayed over your body
But nothing ever happened
I remember at Michael's house
In the living room, when you kissed my neck
And I almost touched your blouse
In the morning when you finally go
We are awaken with the ax
We are awaken with the ax
He comes dividing man from brothers
The neighbors they adored him
He'd kill ten thousand people
The neighbors they adored him
He's got it right, he's got a better life coming
The neighbors they adored him
But he took my shoulders, and He shook my face,
and He takes and He takes and He takes
Trouble falls in my home
Troubled man, troubled stone
turn a mountain of lies
turn a card for my life
Mass of fraud, Man of Heart
Tame our ways, if we start
To devise something more
Something half ways
Only a steel man can be a lover
If he had run from guilt, carry over
We celebrate our sense of each other
We have a lot no give me another
I took a bus to the lake
Saw the monument face
Yellow sides, golden eyes
Red and white, red and white
Rust the flag, summer home
Parted hair, and part unknown
If I knew what I read
I'll send it half ways
Only a steel man can be a lover
For the next piece I wanted to deal with the music itself, and since it has been quite a long time since I’ve played an instrument, I turned to the internet for help. I found Audacity, a program that produces wavelengths of audio files. I ran each song through the program, then simplified the wavelengths into vectors. The result was a series of abstract looking shapes that reflected the actual auditory patterns of each song on the album. At the time, I didn’t have a piece that displayed all the lyrics in their unaltered form (this was before I came up with my final version of the lyric content piece), so I listened to each song, and made a note of exactly when each lyric was sung. I then began to combine the lyrics and the wavelengths into a series of long posters (version 1). I soon encountered a problem that eventually led to the creation of the vocal album grid: There were many instances of multiple lyrics being sung at the same time, and it got very difficult to fit all the lyrics in the chart during those sections. I also wanted to move away from the lyric-heavy work I’d been doing up until that point. So I scrapped the lyrics and started playing around with the shapes of the wavelengths themselves. I tried all sorts of crazy techniques in Adobe Illustrator but was faced with huge, unmanageable files and impossibly slow uncooperative computers. They were also veering away from information graphics and towards meaningless abstract art. I decided to see what it would look like to overlap every song to see if there were any interesting trends in song structure that could be seen in the wavelengths. The result (version 2) was more attractive, and showed some patterns as well. I was still not pleased with how little information it was giving to the viewer, so I decided to simplify and place each wavelength in chronological order. This was the final version because it showed the entire album at once, revealed patterns, and reinforced the color theme (as opposed to the color coding of lyrics) used elsewhere in the project.
In another effort to move away from lyrics, I decided to represent instrumentation, another clear aspect of the music, since there is a list of all the instruments played on the album in the CD booklet. There are 28 instruments played on the album. All but the trumpet and string quartet are played by Stevens himself. I decided to also temporarily move away from abstract forms and just create a simple graphic representation of all the instruments played on the album. I did a lot of image research to find just the right reference photos for every instrument. I then made vector silhouettes of all of them and arranged them in individual rectangles to make a poster. I also spoke with a friend of mine who recently graduated from the music conservatory about figuring out which instruments are played on each song, to add another level of information to the poster, but unfortunately that never panned out.
Illinois has always felt to me like one cohesive piece of music that should be heard all at once, as opposed to a series of singles. I wanted to create a piece that reflected that nature and not differentiate between songs. I had not yet dealt with the complexity of the vocals on the album such as the use of back-up singers, as well as many times when lyrics such as "ooh" and "ahh" are sung but not included in the lyric booklet. I thought it would be a good opportunity to use the color coded lyrics again and to incorporate the intricacy that happens when many singers are singing different parts at once. I decided to map out every second of the album on a grid, where each square was one second and each row was one minute. I set up a key that had all the lyric subjects, as well as an indication for instrumentals, back-up singers and non-word vocals. I then made my way through the album and filled in every square on the grid. During the seconds when multiple voices and topics were sung at once, I split up the squares into parts, which was especially difficult and time consuming to do. I made a few minor alterations to this piece before the exhibition for ease of viewing, such as adding thin white lines to differentiate between each square, and removing numbers that indicated time.
I wanted to look at the most commonly used words on the album next, but when I ran the lyrics through a word counter, the most commonly used words are *the*, *and*, *I*, *you*, *of* and *in*. I couldn’t think of a way to make that information interesting, so I decided to find out what words follow the most common words, which proved to be much more informative and showed a deeper view of word usage patterns. So I made a list of all the words and made a map of them in alphabetical order surrounding the base word. Then I connected them using lines that were thicker and darker the more often they are used. The word *the* is by far the most commonly used word, so it produced a circle much larger than the other base words. The most common words to follow *the* are *great*, *heart*, *earth* and *spirit*. I found the *the* circle to be more interesting than the others, so I ended up dropping the rest and having this be a singular piece.
I had not yet touched on the subject of Illinois (the state) which is obviously a very important part of the album. The album makes reference to many different cities, towns, bodies of water and landmarks around Illinois, as well as mentions of Michigan and New York City. I went through the lyrics and made a list in chronological order of all the places referenced on the album, and then used Google Maps to find the exact location of each place, which I then marked on a map of my own. Then I made a line from each location to the next in the order they are mentioned. I thought it was more unique not to show the outline of Illinois or any other images you’d normally find on a map, just dots and lines. That left this piece sort of sparse, so I came up with the idea of using map pins and string on the wall of the exhibition. I printed out a huge version of the map, and when setting up the show, I taped it to the wall. I made a small hole in the wall at each location then removed the paper map. Then, I inserted black map pins into the holes, adhered small labels next to each pin to identify the location and used blue string to connect the pins in the correct order.
For the final piece, I wanted to work with the more technical side of the music and map the notes used in each song. Since it has been many years since I’ve even played an instrument, I knew I was at a disadvantage, so I searched online for a program that could help me. After quite a bit of searching, I found a frequency analysis program that produces visual marks that correspond to specific notes across the course of a song (screencap 1). The program let me make note of where these blotches of color were (screencap 2), so I went through every song and marked when notes were being played. After I marked up each song, I looked at the color usage circles and the wavelengths to determine the color scheme of the word usage circles and the wavelengths to determine every song, I graphed the percentage of the song each note played to create very different jagged patterns that accurately showed their spectrums of sound. I used the color scheme of the word usage circles and the wavelengths to determine the color of each graph. There was briefly a time when I thought I could make a 3-D sculpture out of this piece, using a stack of clear round panels of Plexiglas with the graph printed on each one. But the time, cost and skills needed for that project proved to be too much to accomplish, especially since there are 22 graphs.
The Black Hawk War, or, How to Demolish an Entire Civilization and Still Feel Good About Yourself in the Morning, or, We Apologize for the Inconvenience but You’re Going to Have to Leave Now, or, “I have fought the Big Knives and will continue to fight them until they are off our lands!”

Track 2

Track 2 close up
Although I had finished designing the project, there was still much more to accomplish to prepare for the exhibition at the end of April. After a few initial printing issues, I spent one long day and night printing everything on the large format printer. I wanted to hang everything as simply as possible without poking holes in all the prints, so I decided to use push pins and binder clips that I had spray painted white over spring break. Since there is so much white space in all the prints, I needed a way to differentiate between the paper and the walls as well as make the room less sterile looking, so I decided to paint the walls a very light blue. I spent the couple weeks before the show prepping and getting everything I needed: speakers to play the music, writing, printing and mounting captions, painting map pins black and making labels, buying hanging materials, getting postcards printed, the list seemed endless at the time.

During those couple of weeks, I also was asked by Dave Gluck, my second reader, to come into two music classes to present my project to the students. I went into a song writing class of mostly non-music majors and a lyric writing class of mostly music majors. These were really great and interesting experiences. I learned a lot about the patterns my work had revealed without realizing it, as well as about the music itself. Their questions and comments were so different than those of visual artists. It was also the first time I had gotten a significant number of reactions, since I had been working on this project in a bubble for so long.

Thinking of and creating this project was really fantastic. It was such a unique experience to be able to be so self directed and work so extensively on a subject that interests me so much. Looking back, I wonder how it took me so long to find the concept for this project. It feels like it was inevitable now. I’ve learned so much from this process, especially about how to collect and display information, as well as details about lyric writing and music, which has been invaluable. Because of this project, I now listen to *Illinois* in a completely different way, and can understand and appreciate it more fully than I could before.