

# Improving the Visualization of Lyrical Themes

JULIANA COOK SARAH STERMAN EMMA TOWNLEY-SMITH

## HAMILTON THEMES

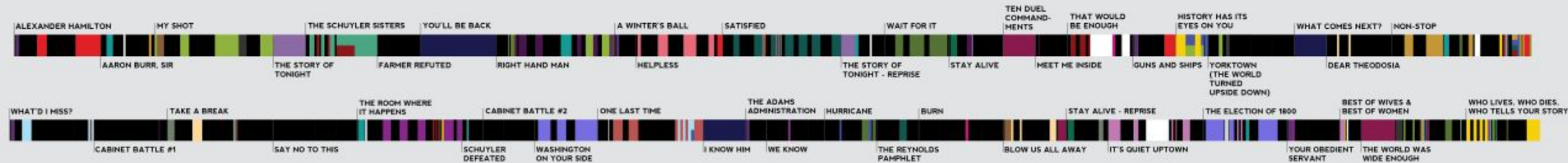
LYRICAL THEMES IN HAMILTON. NOT INCLUDING INSTRUMENTAL THEMES AND SPOKEN PHRASES.  
IN THE OFFICIAL SCORE, THEMES MAY HAVE DIFFERENT NAMES.

HOW DOES  
ALEXANDER HAMILTON  
AARON BURR, SIR  
TAKE A LEAF OUT OF  
STAND FOR NOTHING  
MY SHOT  
KING'S COLLEGE  
IMAGINE DEATH

STORY OF TONIGHT  
THE SCHUYLER SISTERS  
LOOK AROUND  
KING GEORGE  
HELPLESS  
SATISFIED  
RIGHT HAND MAN  
WAIT FOR IT

STAY ALIVE  
DUEL COMMANDMENTS  
THE NARRATIVE  
HISTORY HAS ITS EYES  
ON YOU  
WHO LIVES, WHO DIES,  
ALUMNI OF COLLEGE

RUNNING OUT OF TIME  
UN, DEUX...  
THE ROOM WHERE  
IT HAPPENS  
ONE LAST TIME  
QUIET UPTOWN  
ON YOUR SIDE



# PROBLEM

# HAMILTON THEMES

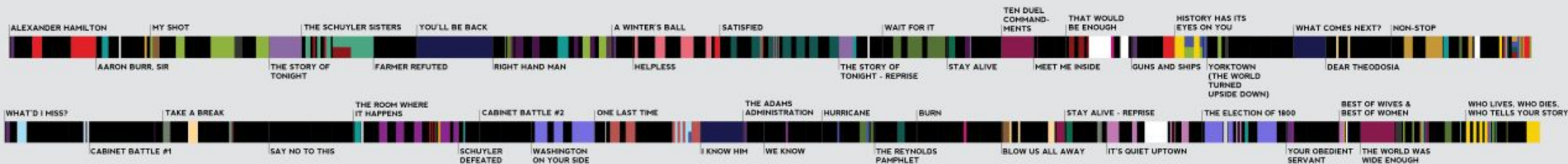
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ON YOU  
WHO LIVES, WHO DIES,  
BLIND AND BLOODY

RUNNING OUT OF TIME  
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QUIET UPTOWN  
ON YOUR SIDE



# PROBLEM

Current methods of visualizing lyrical themes are:

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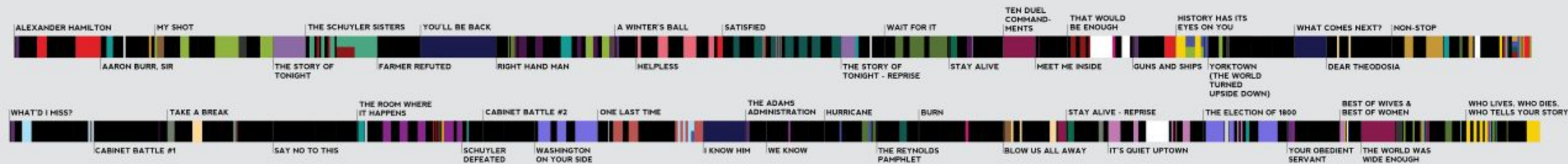
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# PROBLEM

Current methods of visualizing lyrical themes are:

- Not interactive

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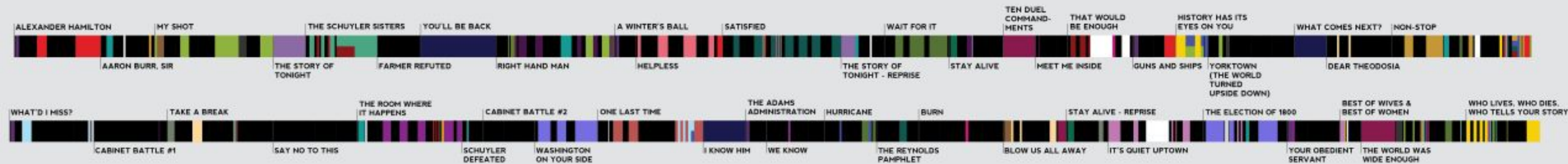
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# PROBLEM

Current methods of visualizing lyrical themes are:

- Not interactive
- Difficult to initially comprehend and explore

## HAMILTON THEMES

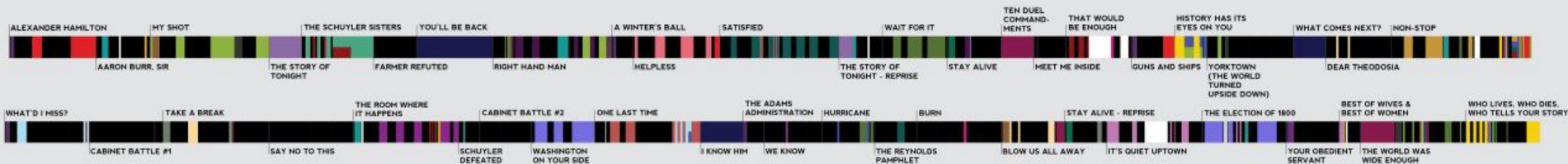
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# PROBLEM

Current methods of visualizing lyrical themes are:

- Not interactive
- Difficult to initially comprehend and explore
- Not standardized or comparable across musical pieces

## HAMILTON THEMES

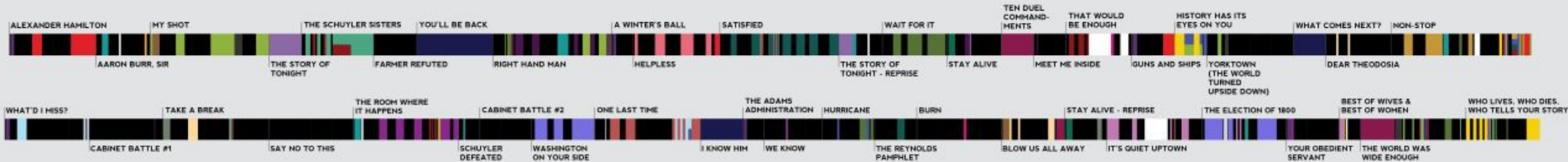
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AARON BURR, SIR  
I CAN BE A GOOD FIGHTER  
STAND FOR NOTHING  
MY SHOT  
KING'S COLLEGE  
IMAGINE DEATH

STORY OF TONIGHT  
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# PRIOR WORK

## Categories

Visualizing music  
& musical themes

Visualizing themes  
over time

Choosing distinct colors

Using distortion for  
emphasis

Algorithmically  
determining overlap

# PRIOR WORK

## ThemeRiver

- Uses time series graph to show changes in thematic strength over time
- Shows multiple co-occurring themes

### However:

- No additional data associated
- No ordering of themes
- Less useful for micro trends
- Hard to read exact values

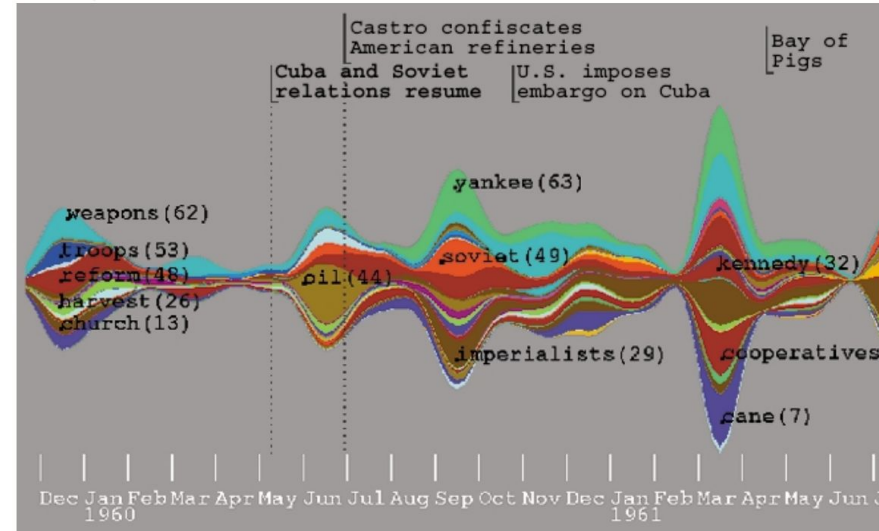


Figure 1: ThemeRiver™ uses a river metaphor to represent theme changes over time.

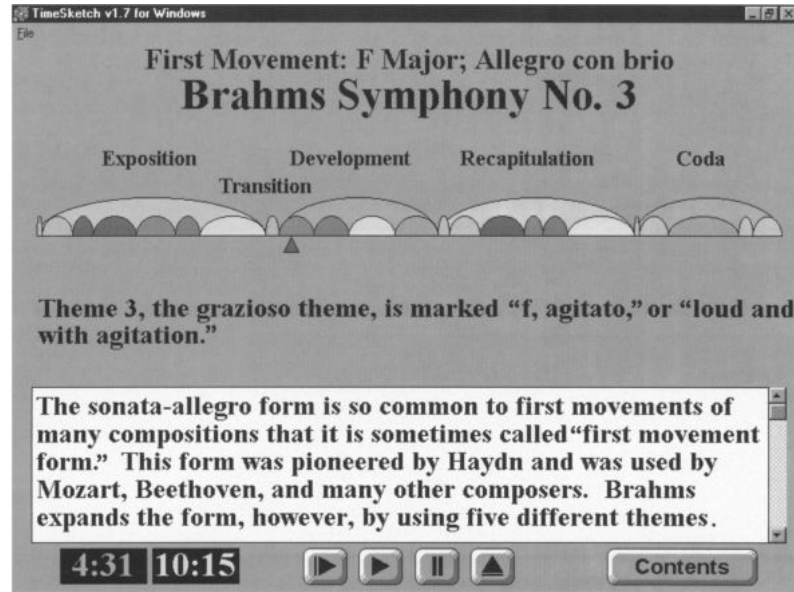
# PRIOR WORK

## TimeSketch

- Commercial program for visualizing musical themes
- Used in educational context
  - “Captivating”
  - No programming knowledge
- Annotations keyed to time stamps
- Supports live playing

However:

- Connecting repetitions unclear
- Very old software
- No direct comparison between clips





# STORYBOARD

## LYRICAL THEMES OF HAMILTON

THEME1	THEME5
THEME2	THEME6
THEME3	THEME7
THEME4	THEME8

ACT ONE

SONG TITLE



SONG TITLE

ACT TWO

SONG TITLE



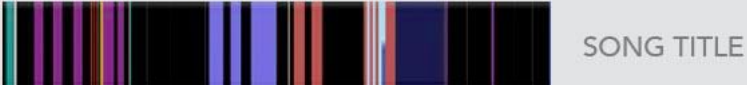
Theme Name in "Song Name"



**Lyrics**  
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec luctus, ligula non consectetur faucibus, ligula magna porta elit, in aliquam quam eros vitae enim. Sed interdum sit amet orci id elementum.

# STORYBOARD

## LYRICAL THEMES OF HAMILTON



# STORYBOARD

## LYRICAL THEMES OF HAMILTON

A horizontal bar composed of vertical stripes in various colors including red, black, green, and blue.

SONG TITLE

A horizontal bar composed of vertical stripes in various colors including purple, black, red, and blue, with a white mouse cursor arrow pointing to the right.

SONG TITLE

THEME1    THEME5

THEME2

THEME3

THEME4

A simple audio player interface featuring a blue play button on the left, a vertical slider in the center, and a horizontal progress line extending to the right.

**Lyrics**

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec luctus, ligula non consectetur faucibus, ligula magna porta elit, in aliquam quam eros vitae enim. Sed interdum sit amet orci id elementum.

A horizontal bar composed of vertical stripes in various colors including purple, black, red, and blue.

SONG TITLE

# COMPLETION PLAN

## Today

Lit review  
Storyboards  
Progress report

## This week

Harvest data from image + lyrics, timestamps  
Create bar graph using d3

## Next week

Hover over theme bars and highlight themes  
Show detail pane for each theme (audio clip + lyrics)  
Split nav-theme-bars into songs

## Stretch Goals

Chord diagram  
Animation

# FEEDBACK & QUESTIONS

## Questions we're working on:

- What other data might we want to harvest and incorporate in showing the details for themes or songs?
- What's the best way to visually highlight brief (thin) themes?

## SOURCES

Cami W. "Hamilton Themes." Web log post. Midnight Musings. Tumblr. Web. <[https://tumblr.co/ZIVuCx24u\\_rSE](https://tumblr.co/ZIVuCx24u_rSE)>.

Havre, Susan, Beth Hetzler, and Lucy Nowell. "ThemeRiver: Visualizing theme changes over time." *Information Visualization, 2000. InfoVis 2000*. IEEE Symposium on. IEEE, 2000.

Baltzer, Sam. "Enhancing Aural Lessons with Multimedia Programs." *Music Educators Journal* 83.3 (1996): 33-50. Web.