



How the US Presidential Speeches changed over time?

Project 4: NLP on Presidential Speeches

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Jaydon Youngho Jung



DATA

- 43 Presidents
- 968 speeches

TOOLS

- Scrapy
- NLTK
- Spacy
- TextBlob
- Sklearn

I. Topic Modeling and Sentiment Analysis

Topic Modeling Overview

topic 1: shall, service, may, examination

topic 2: men, world, people, great

topic 3: states, government, united, congress (**nation*)

topic 4: president, would, mr, general

topic 5: states, slavery, would, south

topic 6: president, people, mr, general (**title*)

topic 7: government, upon, would, country

topic 8: people, us, world, must, america

1780 — 1840

states

government

united

congress

great

1840 — 1900

states

government

united

country

people

1900 — 1960

government

people

states

American

president

1960 — 2016

people

us

president

American

one

1780 – 1840

states

government

united

congress

great

1840 – 1900

states

government

united

country

people

1900 – 1960

government

people

states

American

president

1960 – 2016

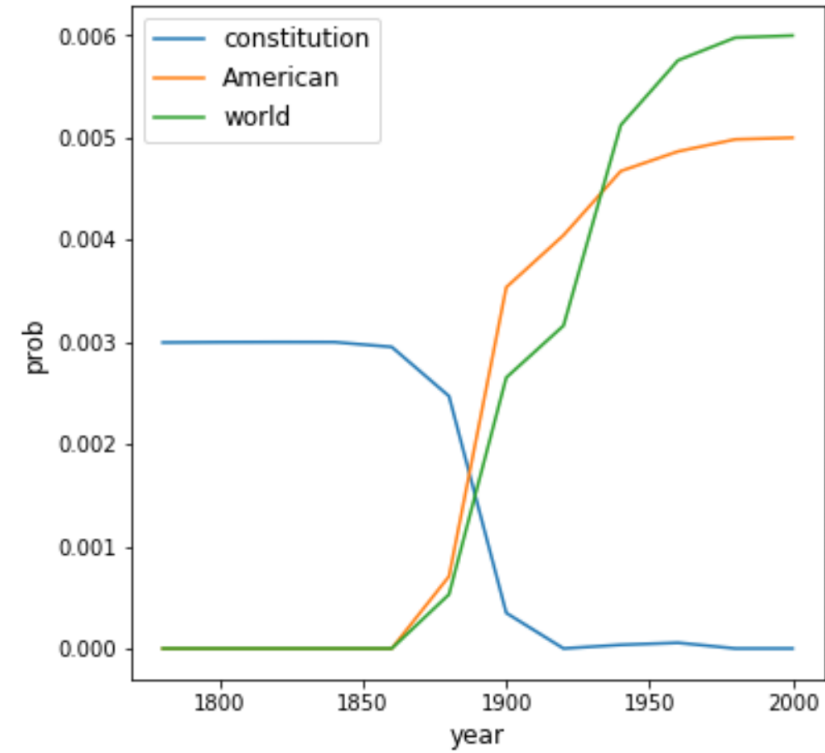
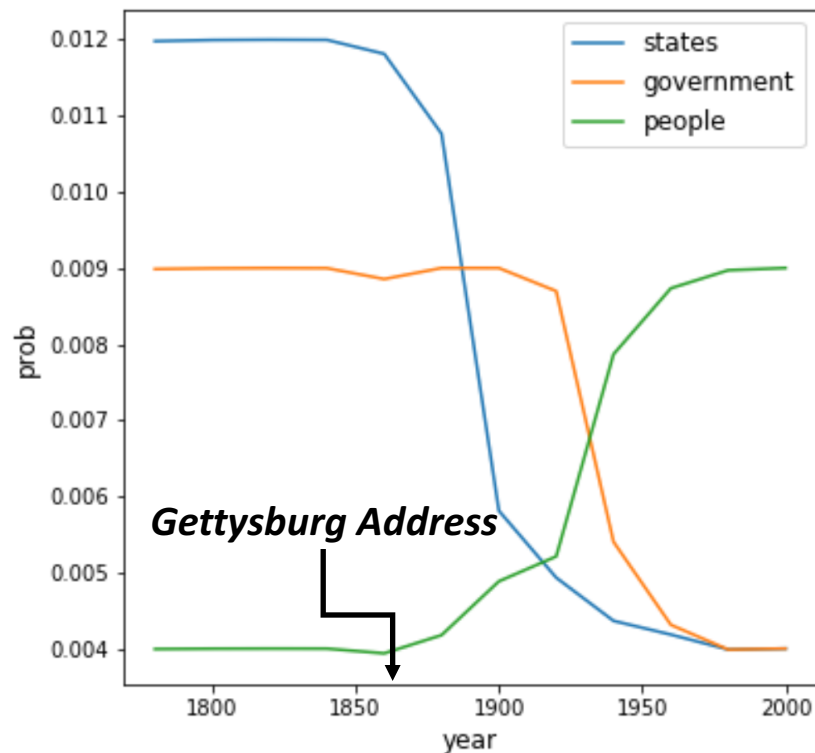
people

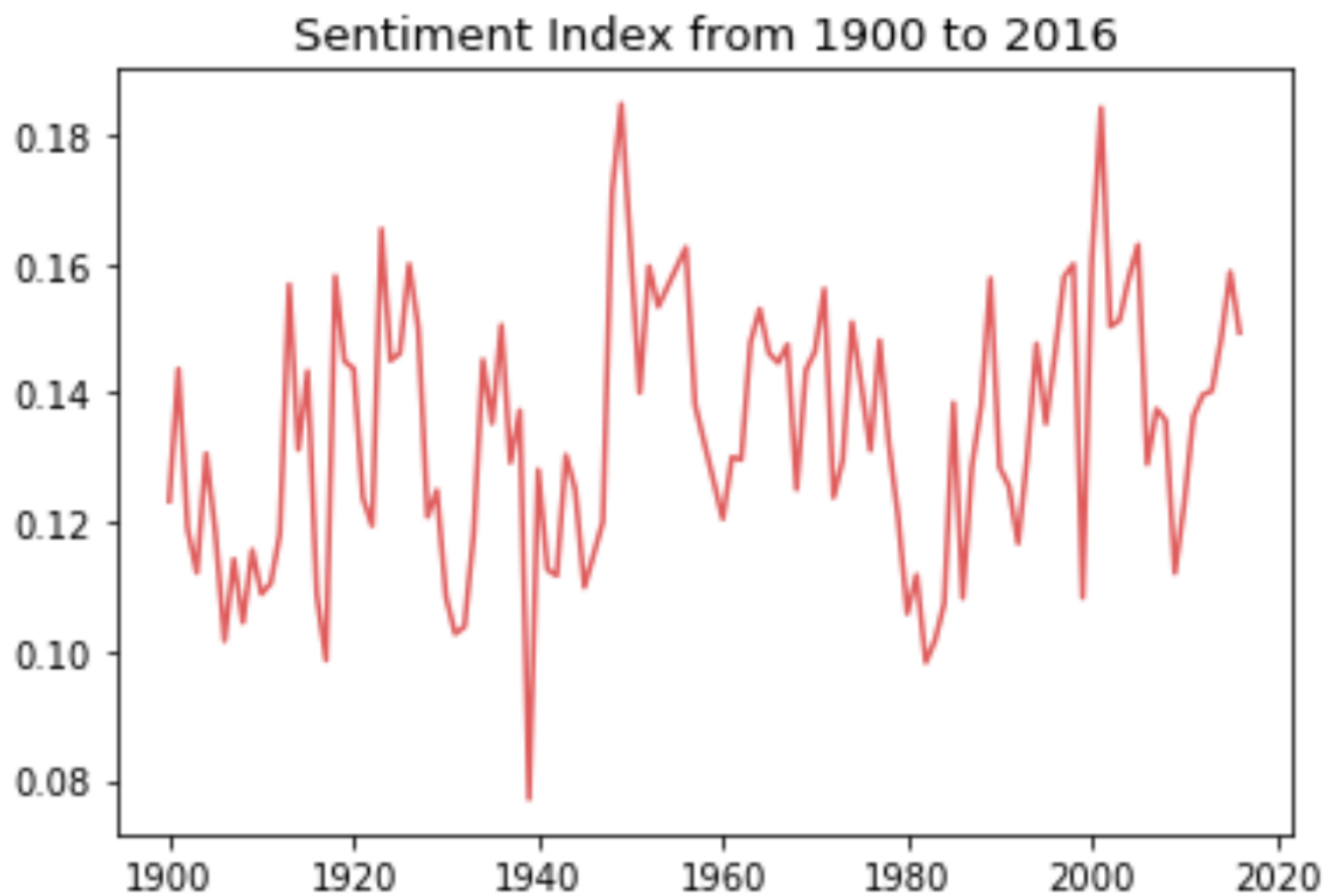
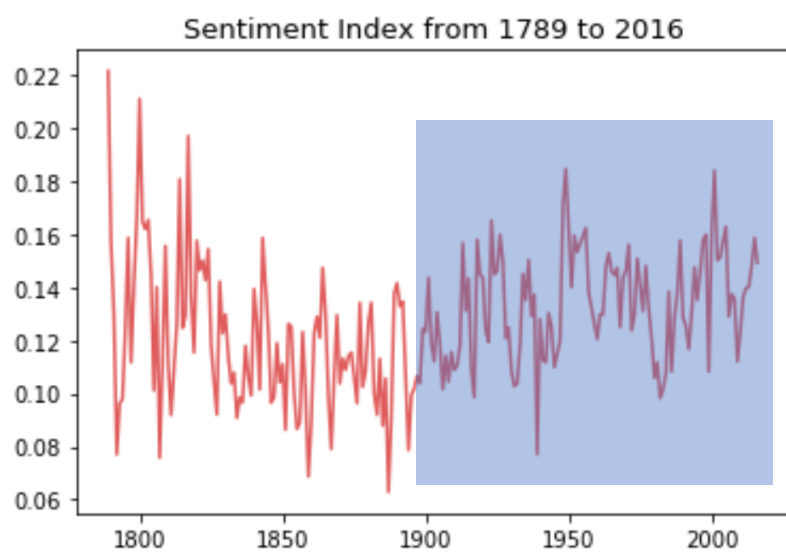
us

president

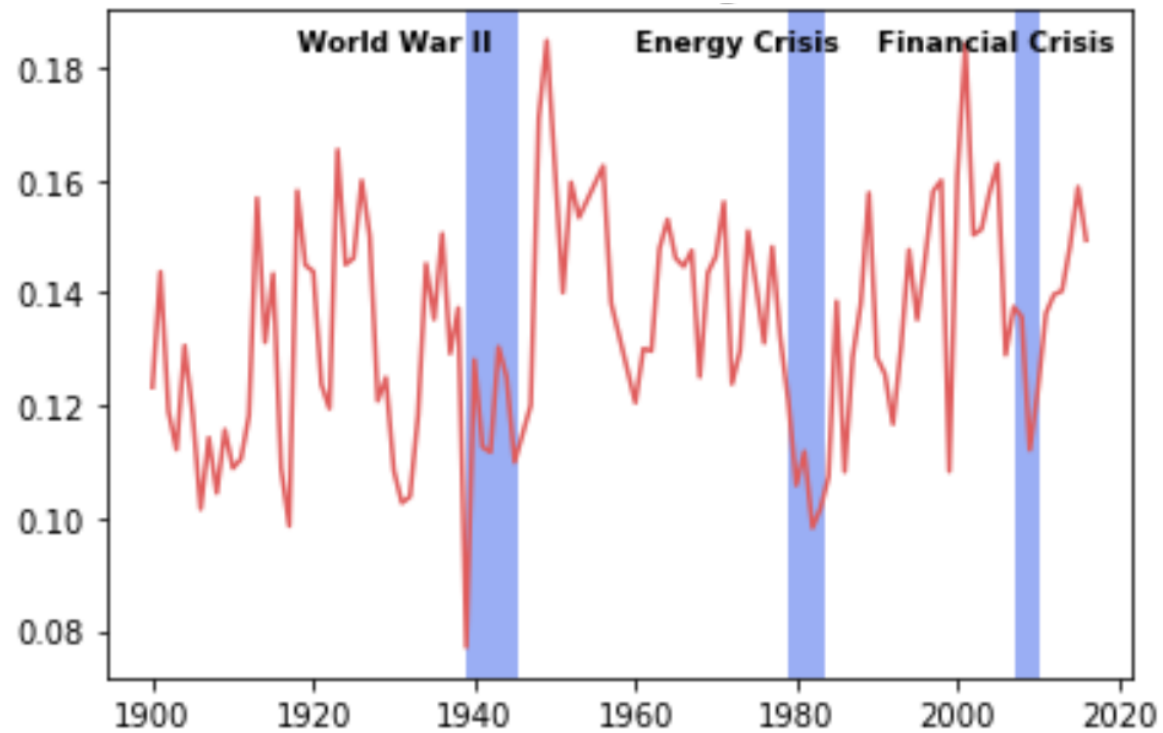
American

one

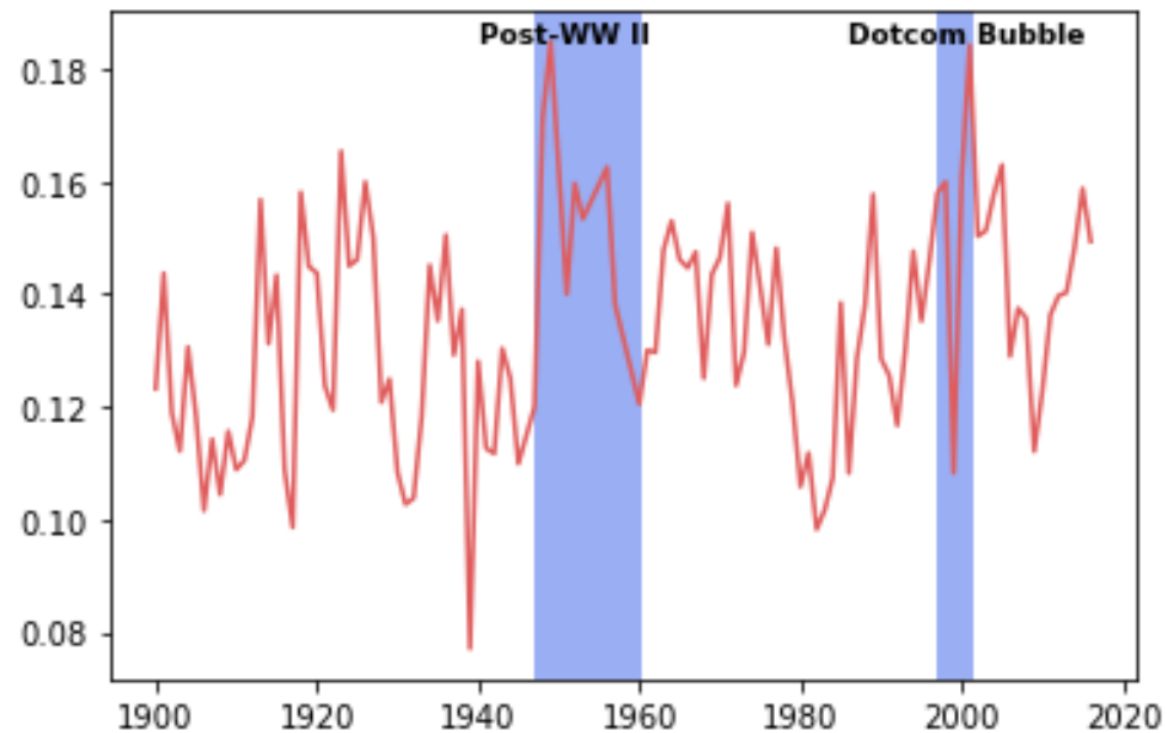




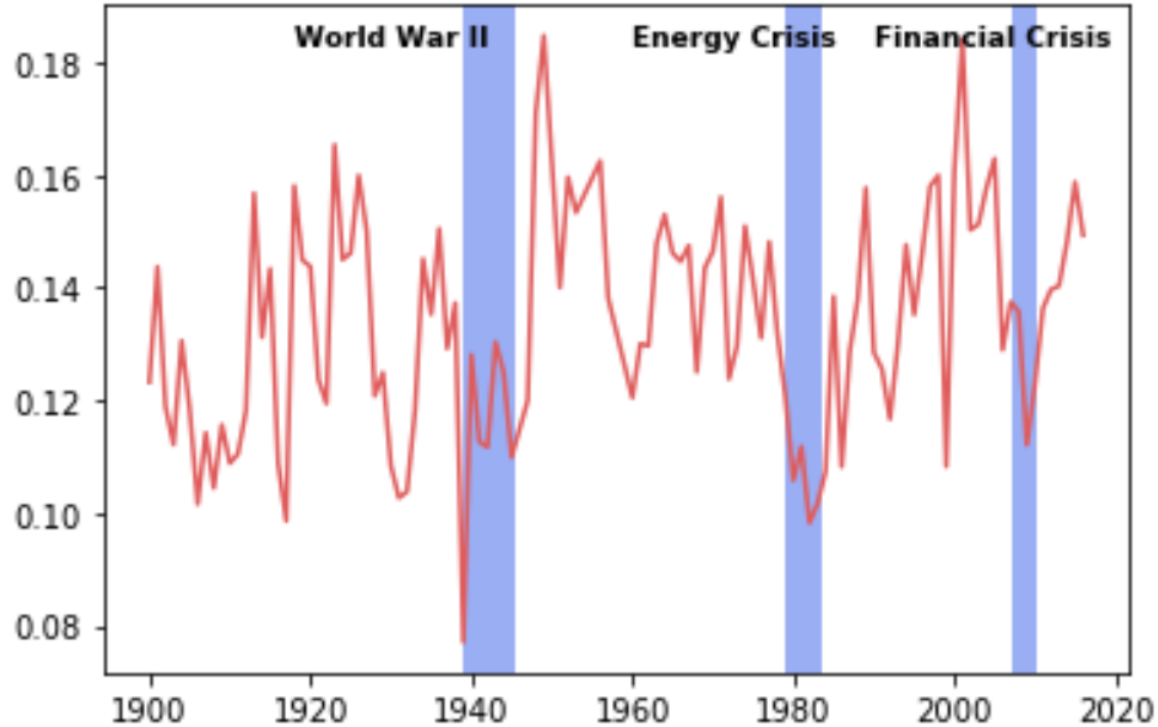
bad times



good times

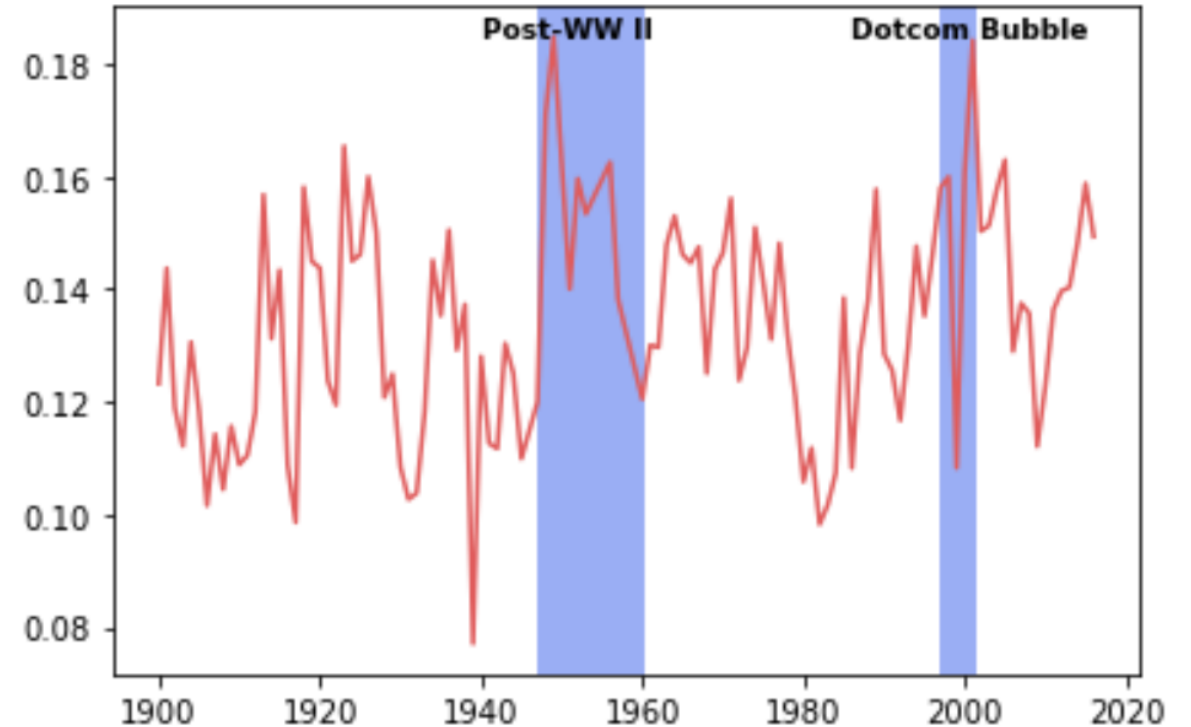


bad times



War: defense, problem, **bankruptcy**, money
Mood: spirit, peace, strength, **competitive**
Policy: **threat**, foreign, necessary, **cost**
Economy: energy, public, oil, **inflation**, **unemployment**

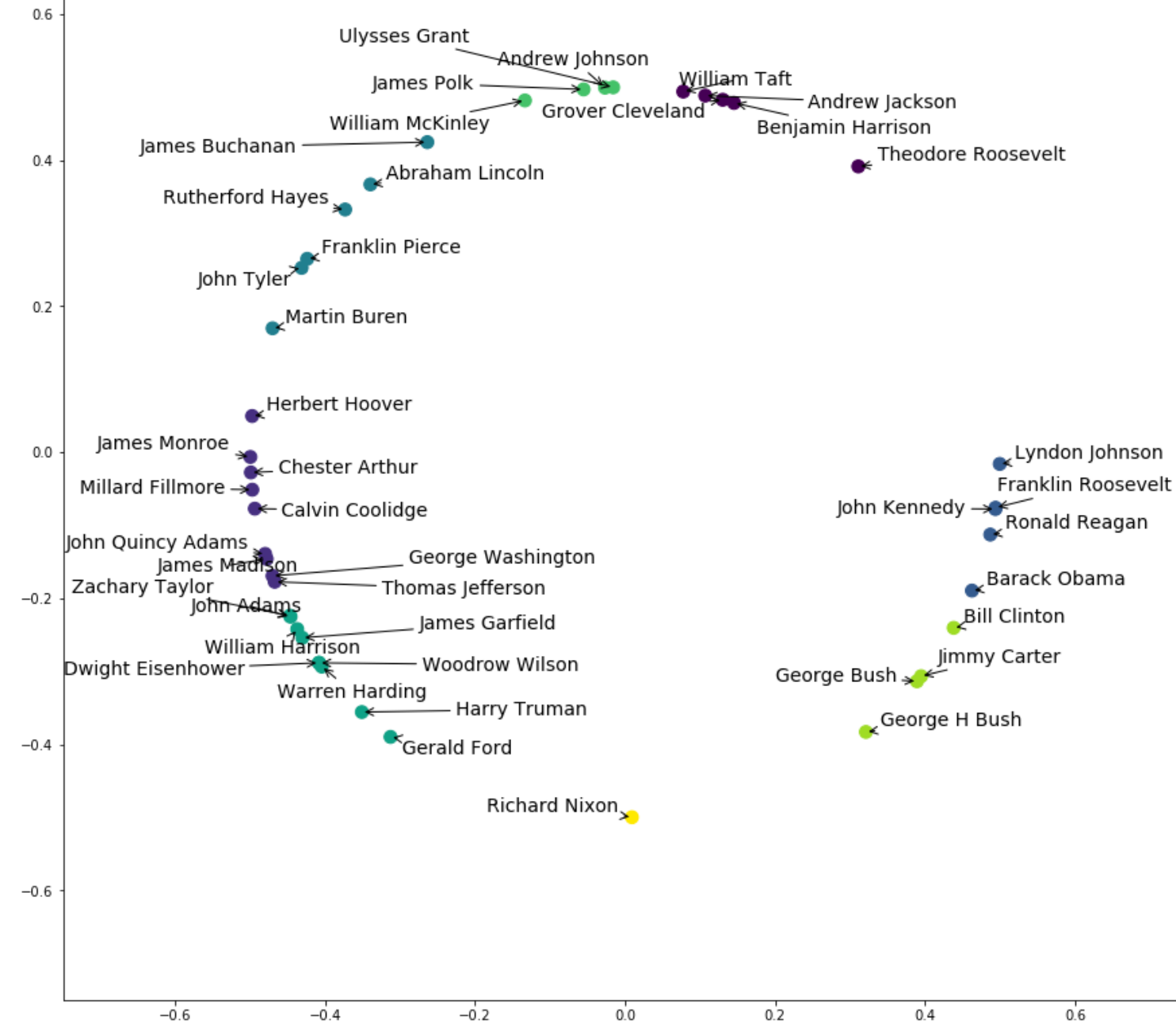
good times



Post-War: war, nation, course, life, effort
Mood: **opportunity**, **right**, day, young, program
Policy: security, work, **future**, long, action
Economy: country, tax, today, national

II. Clusters

K-means / normalized PCA

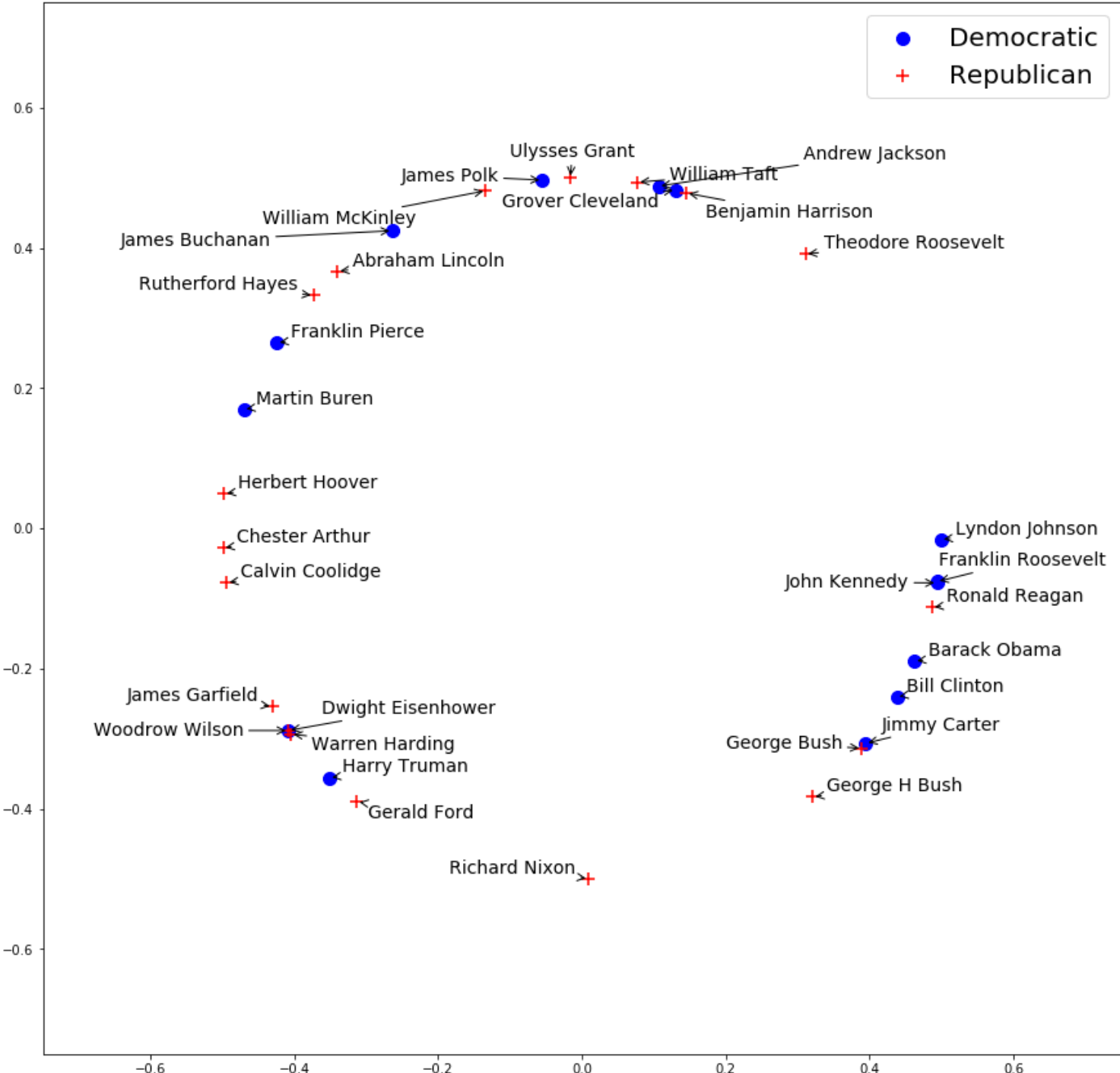


Cleaning

- Eliminate stop words
- Extract stems from tokens

Process

- 2-dimensional PCA
- normalize to a unit circle
- # of clusters = 8



Democratic

examine, power, present

free, last, know, **duty**

man, generation, hope

service, **Vietnam**

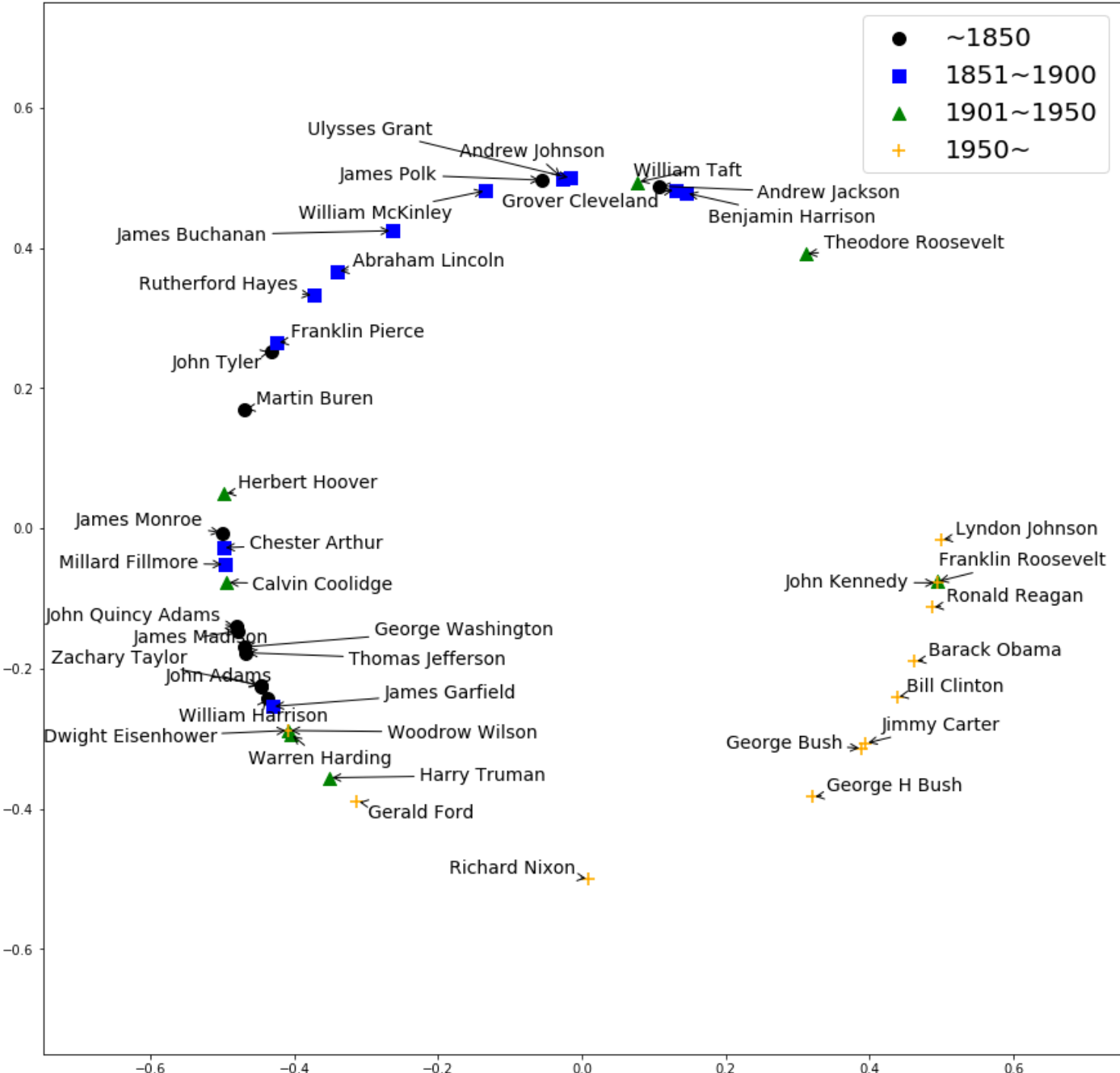
Republican

business, help, **tax**

Iraq, slavery, republican

territory, union, right

security, increase



B. Obama + B. Clinton + J. Carter + G. Bush

American, people, us

country, world, one, work

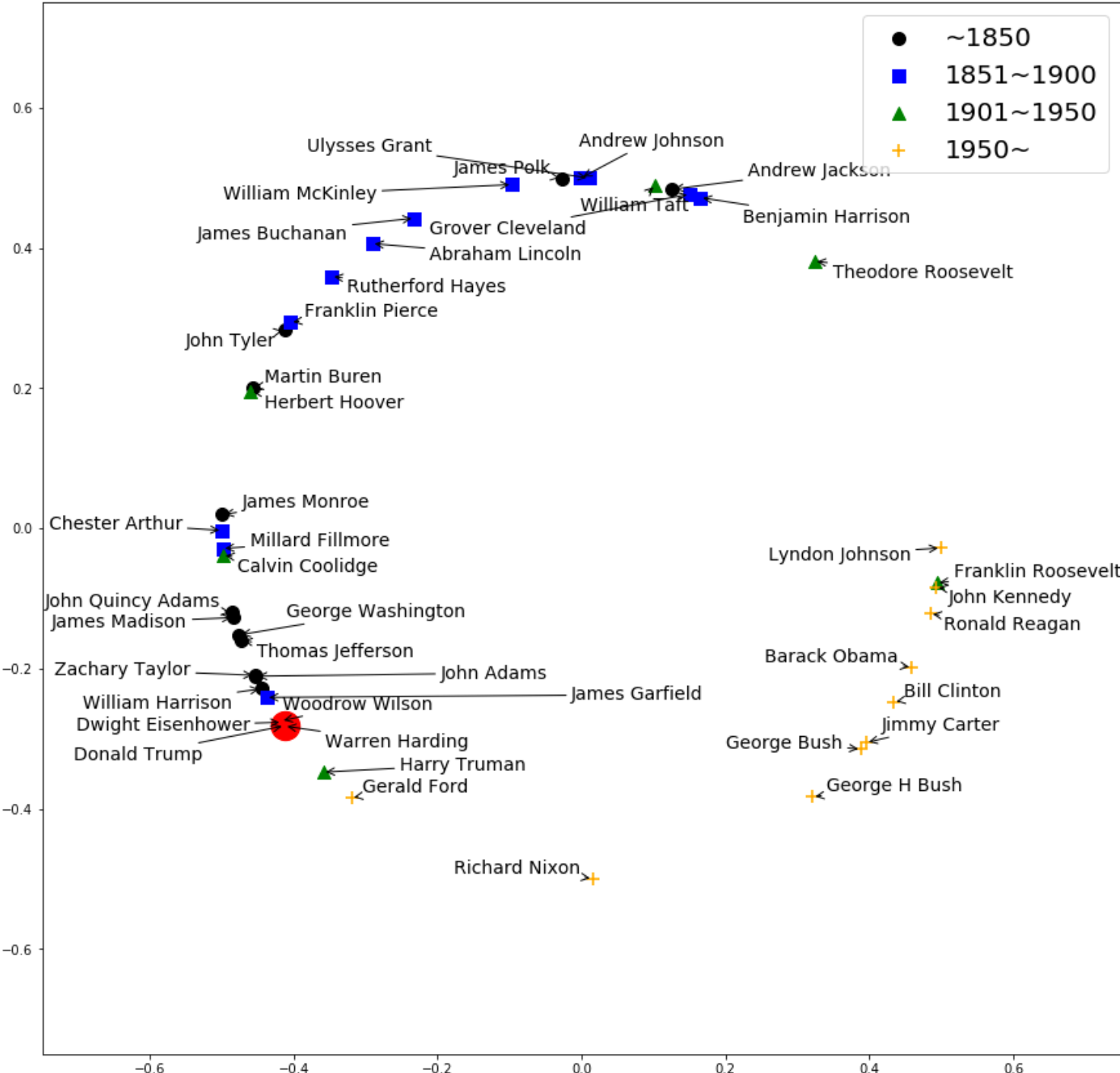
go, applaus, time, make, state

F. Pierce + R. Hayes + A. Lincoln + J. Buchanan

country, territory, law, constitution

congress, people, unit, power

public, right, one, act



Trump's speech is Most Similar to

Warren Harding (1921 – 1923)

Dwight Eisenhower (1953 – 1961)

Woodrow Wilson (1913 – 1921)

James Garfield (1831 – 1881)

William Harrison (1773 – 1841)

Takeaways

- ✓ Nation-related vocabularies such as “government”, “states” appeared less frequently after 1850s.
- ✓ Presidential speeches tend to be depressed during the economic recessions.
- ✓ There is no strict distinction between parties, implying that parties’ agenda have evolved over time.
- ✓ Presidential speeches started to become similar after 1950s except for Donald Trump. (biased)

Thank you for listening

Questions?