Enlightenment Ideals and Belief in Science in the Run-up to the Industrial Revolution: A Textual Analysis

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Spring 2024 Conference of The Working Group on the Foundations of Long-run Prosperity

Hoover Institution

Overview

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  ▶ Influential hypothesis by Joel Mokyr on "Industrial Enlightenment" in Britain

▶ Use volumes published 1500-1900 and digitized by the Hathitrust Digital Library to study how the language of science changed over time

Contribution

- ▶ First systematic evidence for Mokyr's argument

- ▶ At the forefront of emerging tendency in economic history and historical political economy to use textual information to measure hard-to-quantify phenomena

Findings

1. Little overlap in the language of science and religion beginning in the 17th C

2. Works in the nexus of science and political economy become more progress-oriented over time

3. Industry-related works become more progress-oriented in the 17th C

How do we get there?

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▶ In reality, many decisions need to be made

  ▶ Which ones are crucial and how much?

  ▶ Comment #1: Explore this more

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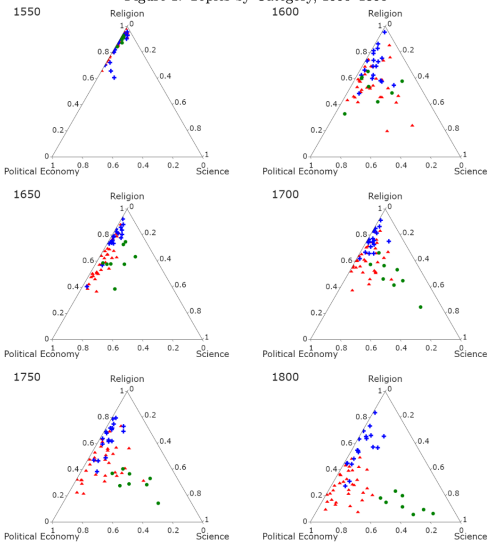3. Group topics into broad categories

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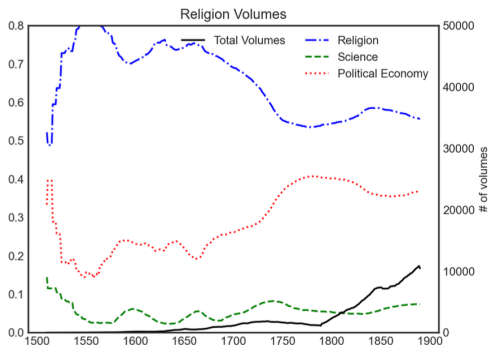
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Comment #2: Steps 2-3 are done in the entire corpus. More volumes in later years. LDA represents later years better.
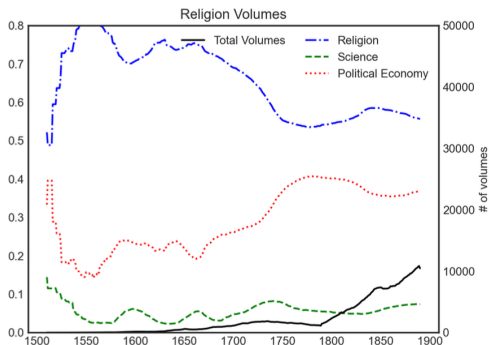
Figure 1: Topics by Category, 1550–1850

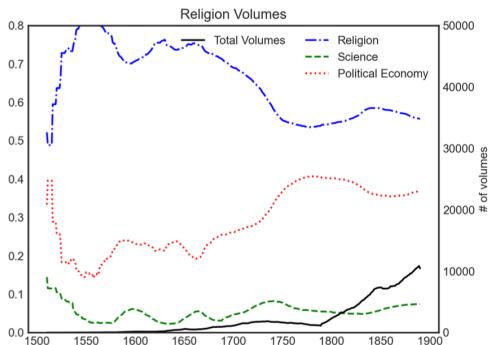# Comment #3: Some of the evidence suggests less distinction

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The Motion of Fluids, Natural and Artificial is 43.7% science and 27.7% religion

An Historical and Philosophical Account of the Barometer or Weather-Glass is 33.7% science and 41.5% religion.

Defining science

Table 1: Categories

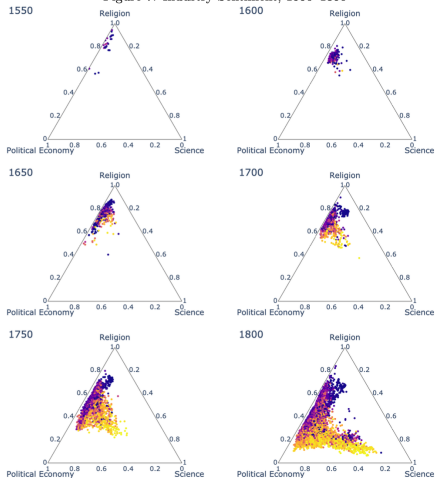| Category	Topics and associated words
"Political Economy"	33 - law lord show public evid opinion fact 34 - govern nation polit parliament constitut war parti 47 - trade amount labour money price cent increas
"Religion"	4 - church christian christ bishop holi paul doctrin 12 - god christ lord thi faith holi sin 52 - hath fame religion men shew virtu likewis
"Science"	7 - fig water iron engin pressur steam electr 8 - acid solut heat carbon water sulphur iron 41 - line angl equal equat sin sun plane

Defining science

Table 4: Top 10 Industrial Words

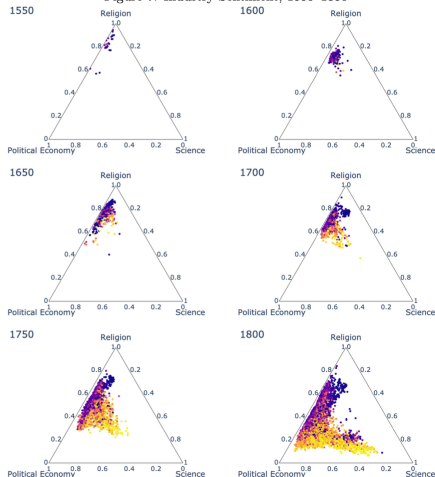| Word/Prefix	Count
crane	51
electr	42
weight	37
rope	27
cost	27
water	25
machin	24
coal	23
iron	22
steel	21

Defining science

Figure 7: Industry Sentiment, 1550–1850

Defining science

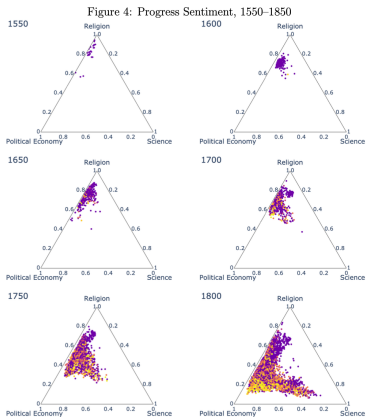
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Comment #4: Check if these results hinge on topic 7

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- Progress and its synonyms less likely to apply to religion
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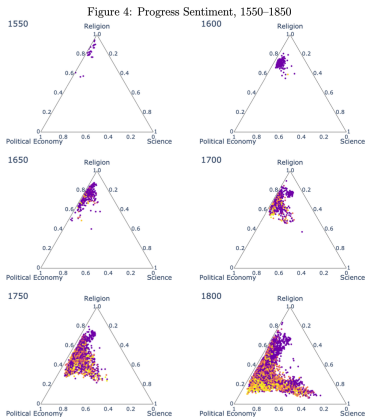

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Comment #5: Do we see more progress for a given point in the triangle?

Smaller things

- Some discussion on selection of volumes into the corpus

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- ▶ Optimism placebo "results are nearly the mirror opposite of those found for progress sentiment"

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- ▶ Volumes in the nexus of science and political economy seen as popular science diffused to lower strata - is it the case? Volumes seem to contain more direct information on popular orientation of the work.