
The Remaking of Reading: Data Mining and the Digital Humanities

Matthew Kirschenbaum
University of Maryland



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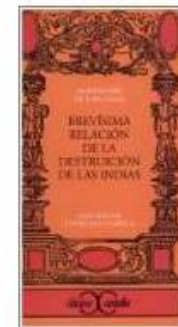
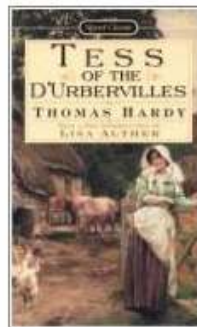
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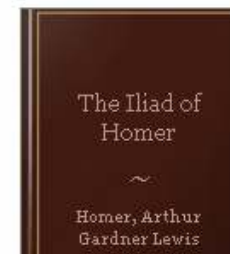
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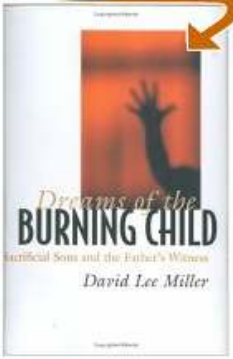
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SEARCH INSIDE!™

Dreams of the Burning Child: Sacrificial Sons and the Father's Witness (Hardcover)
by [David Lee Miller](#) (Author)
Key Phrases: [The Winter's Tale](#), [Ben Jonson](#), [Things Fall Apart](#) (more...)
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Text Stats

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Readability ([learn more](#))

Compared with books in [All Categories](#)

Fog Index:	17.8	89% are easier		11% are harder
Flesch Index:	37.7	70% are easier		30% are harder
Flesch-Kincaid Index:	15.0	90% are easier		10% are harder

Complexity ([learn more](#))

Complex Words:	17%	60% have fewer		40% have more
Syllables per Word:	1.7	59% have fewer		41% have more
Words per Sentence:	28.0	94% have fewer		6% have more

Number of

Characters:	565,709	69% have fewer		31% have more
Words:	92,507	70% have fewer		30% have more
Sentences:	3,302	48% have fewer		52% have more

Fun stats

Words per Dollar:	3,072
Words per Ounce:	5,256

Amazon.com Concordance

act aeneas aeneid again already **between** **body** book boy burning calls
cannot **child** children come culture dead **death** desire dickens does
dombey **dream** economy even fantasy **father** fatherhood figure filial
first form freud **god** hamlet hand himself history human image ing itself
jonson king leontes line little loss lost love makes man may might moment
mother must name narrative new now once **own** passage place play poem
point power priam question re relation ritual **sacrifice** sacrificial **scene**
see seems sense shakespeare social something **son** story subject takes
tale things thought time tion turns virgil whose witness words work world yet

“Humankind writes more than it can read.”

–Gabriel Zaid



But is Reading “at Risk”?

- NEA, 2004

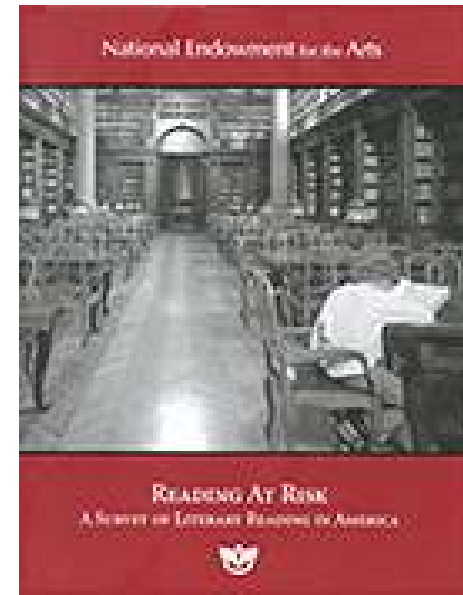


Table 17

Literary Reading, U.S. Adults, 1982, 1992, and 2002

	1982	1992	2002	Change 1982 to 2002
Number reading literature (in millions)	95.6	100.3	96.2	0.6
American population 18 or older (in millions)	168.0	185.8	205.9	37.9
% reading literature	56.9%	54.0%	46.7%	-10.2

“For the first time in modern history, less than half of the adult population now reads literature, and these trends reflect a larger decline in other sorts of reading.”

But What is Reading?

- “Cover to cover”
- Excerpts, selections
- Grazing, browsing
- Skimming, scanning
- Speed reading
- Reference/look-up



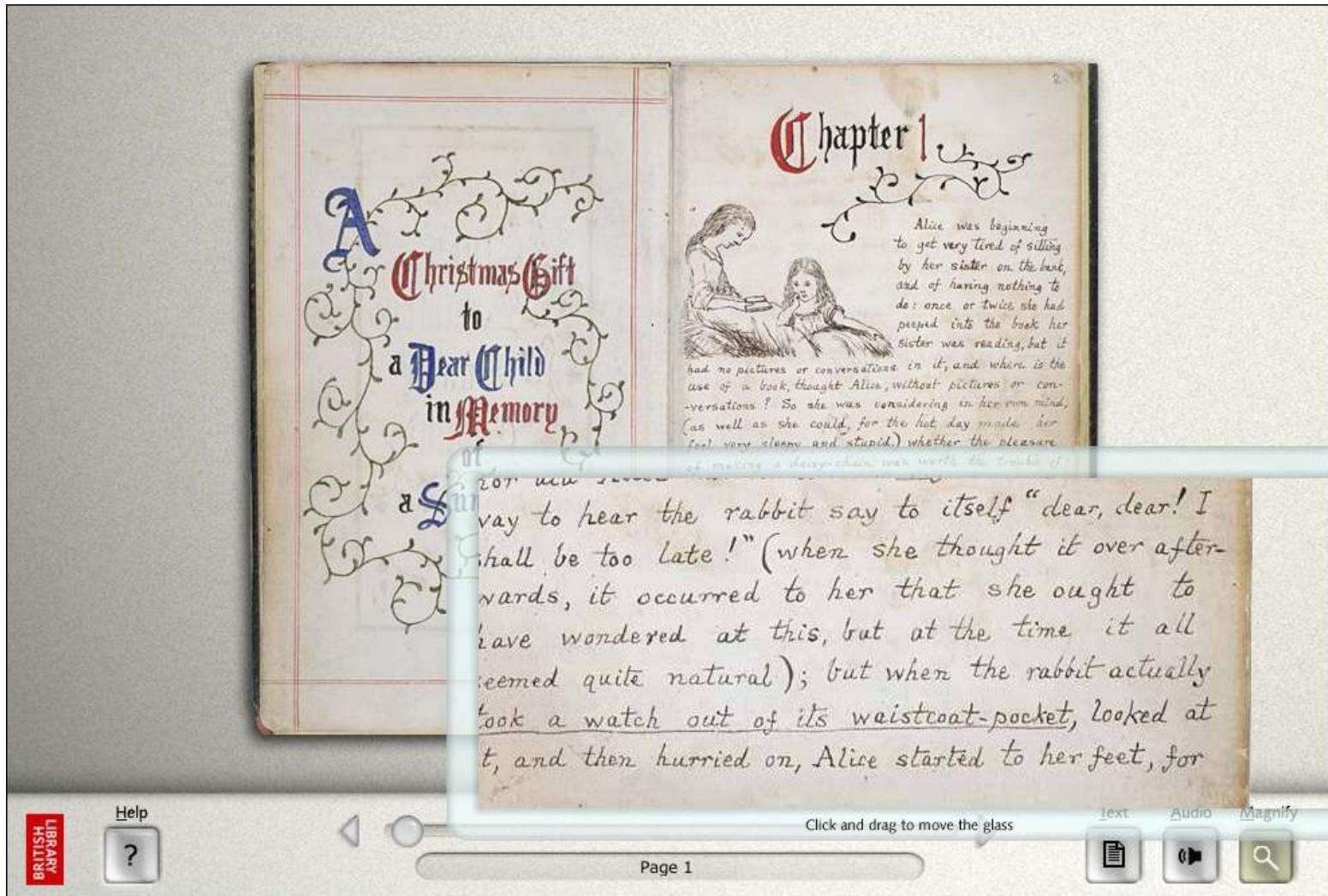
Thomas Jefferson's Revolving Bookstand



“Not Reading”

- “As long as there have been books there have been more books than you could read. In the life of a professional or scholar, reading in the strong sense of "close reading" almost certainly takes a back-seat to finding out what is in a book without actually reading all or even any of it. There are age-old techniques for doing this, some more respectable than others, and they include skimming or eyeballing the text, reading a bibliography or following what somebody else says or writes about it. Knowing how to "not-read" is just as important as knowing how to read.” –Martin Mueller
-

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The adventures of Tom Sawyer (1876)

The adventures of Tom Sawyer (1876)

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Keywords: [Adventure and adventurers](#); [Mississippi River -- Juvenile literature](#); [Missouri -- Juvenile literature](#)

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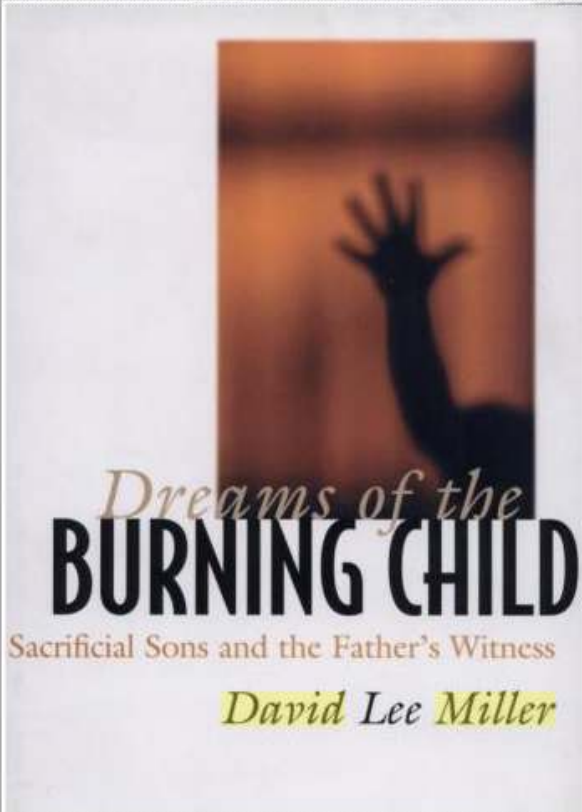


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Dreams of the Burning Child: Sacrificial Sons and the Father's Witness By David Lee Miller

Front Cover  [Full screen](#)



Summary



[About this book](#)

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Microsoft

The screenshot displays the Microsoft Live Search interface. At the top, the 'Live Search' logo is on the left, and a search bar contains the text 'david miller burning child'. To the right of the search bar is a 'Sign in' link. Below the search bar is a navigation menu with options: 'Web', 'Images', 'News', 'Maps', 'MSN', 'More', and 'Books Beta'. The 'Books Beta' option is highlighted.

Below the navigation menu, there is a link 'Back to Book Search results'. The main content area is divided into two sections. On the left, there is a book preview for 'Life's Byways and Waysides' by James Russell Miller, published by T. Nelson in 1907. The book has 296 pages and a 'Download the entire book' link. Below this is a search box labeled 'Search inside the book' with the text 'david miller burning child' and a 'Search' button. Below the search box, it says '71 pages, sorted by relevance'. On the right side of this section, there are navigation arrows.


The right section shows a preview of page 19 from the book. The page title is 'LIFE'S BYWAYS AND WAYSIDES. 19'. The text on the page reads: 'and hands are so full of our own things that we have no time for tasks for Him. We need never fear that our hands will be any less full at the end because we have slackened our pace a little now and then to do some slight wayside service for Christ. There is a story of one who began to run in a race, and ran well—was foremost of all. But by-and-by he stopped to lift up a fallen child and place it out of danger, thus losing something of what he had gained. Farther on, a fainting comrade appealed to his sympathy, and he turned aside to help him'. The word 'child' is highlighted in green in the original image. Above the page preview are navigation controls: 'Contents', left and right arrows, and the page number '19'. A vertical scrollbar is on the right side of the page preview.

At the bottom of the page, there is a footer with the text: '© 2007 Microsoft. Trademarks | Privacy | Legal | For-Site Owners' on the left and 'Help Central | Account | Feedback' on the right.

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Sacrificial Sons and the
Father's Witness**
David Lee Miller

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- Surprise Me!

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40 Dreams of the Burning Child

The idealization that assimilates **Hamlet**'s violence to the morality of a later age shows itself capable of even greater miracles when it assimilates Betterton at age seventy to an image of youthful expectation. It is almost as if the actor were making good on **Hamlet**'s taunt to Polonius: the truth about old men's bodies should not be bluntly set down, "for yourself, sir, shall grow old as I am, if like a crab you could go backward." Later in the same scene **Hamlet** marvels at the transformative powers of make-believe:

Is it not monstrous that this player here,
But in a fiction, in a dream of passion,
Could force his soul so to his own conceit
That from her working all his visage wann'd,
Tears in his eyes, distraction in his aspect,
A broken voice, an' his whole function suiting
With forms to his conceit? And all for nothing.
(2.2.551-57)

Together these passages form a kind of Shakespearean matrix for Mr. Greenhat's account of the admired Betterton: is it not monstrous that this player here can, like a crab, go backward, forcing his soul so to his own conceit that forty years drop away from his visage? He works this miracle

A Poem on a Page Exists as a Unified Visual Event

so much depends
upon

a red wheel
barrow

glazed with rain
water

beside the white
chickens.

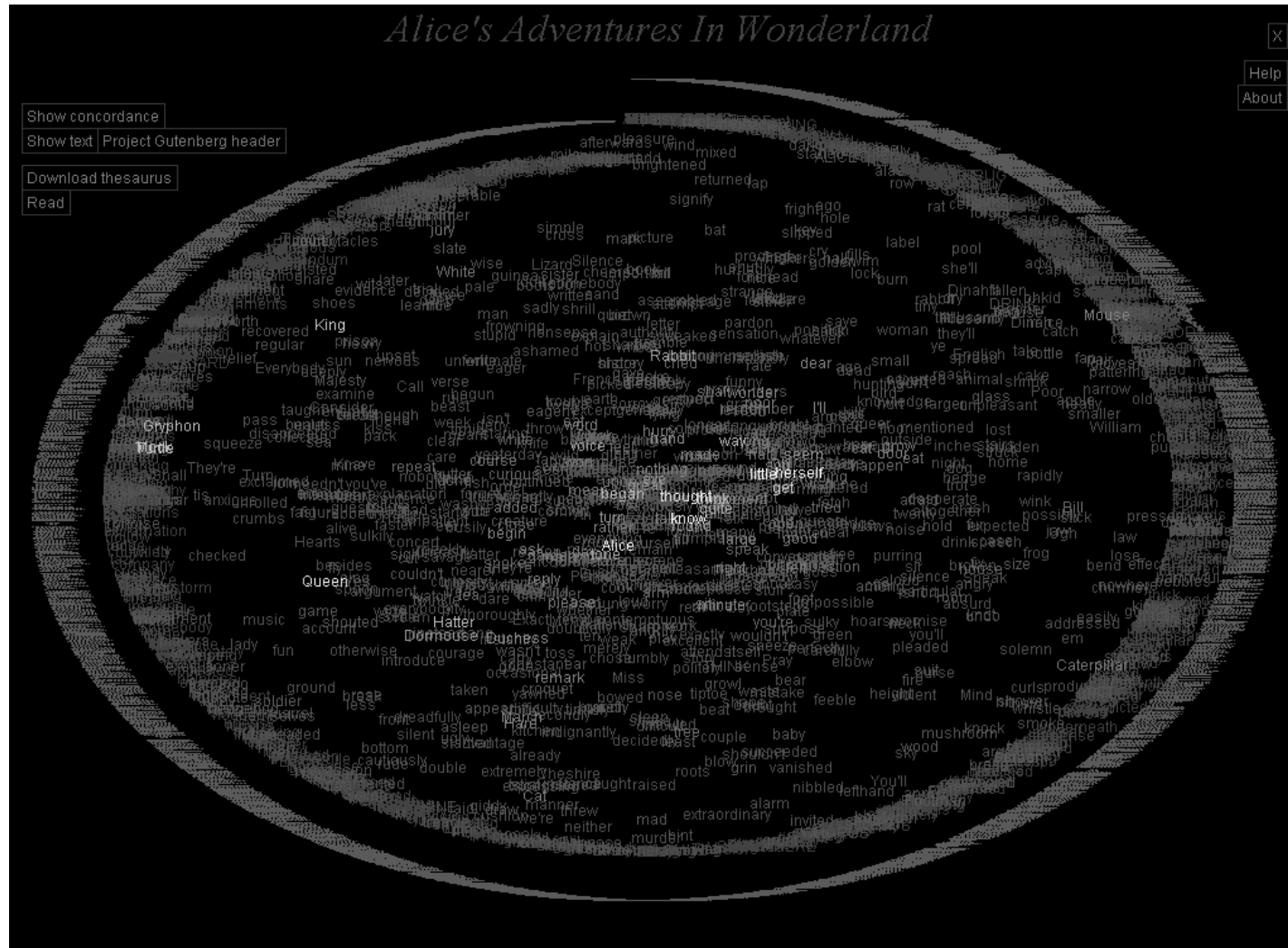
But the Codex Atomizes a Text's Visual Field



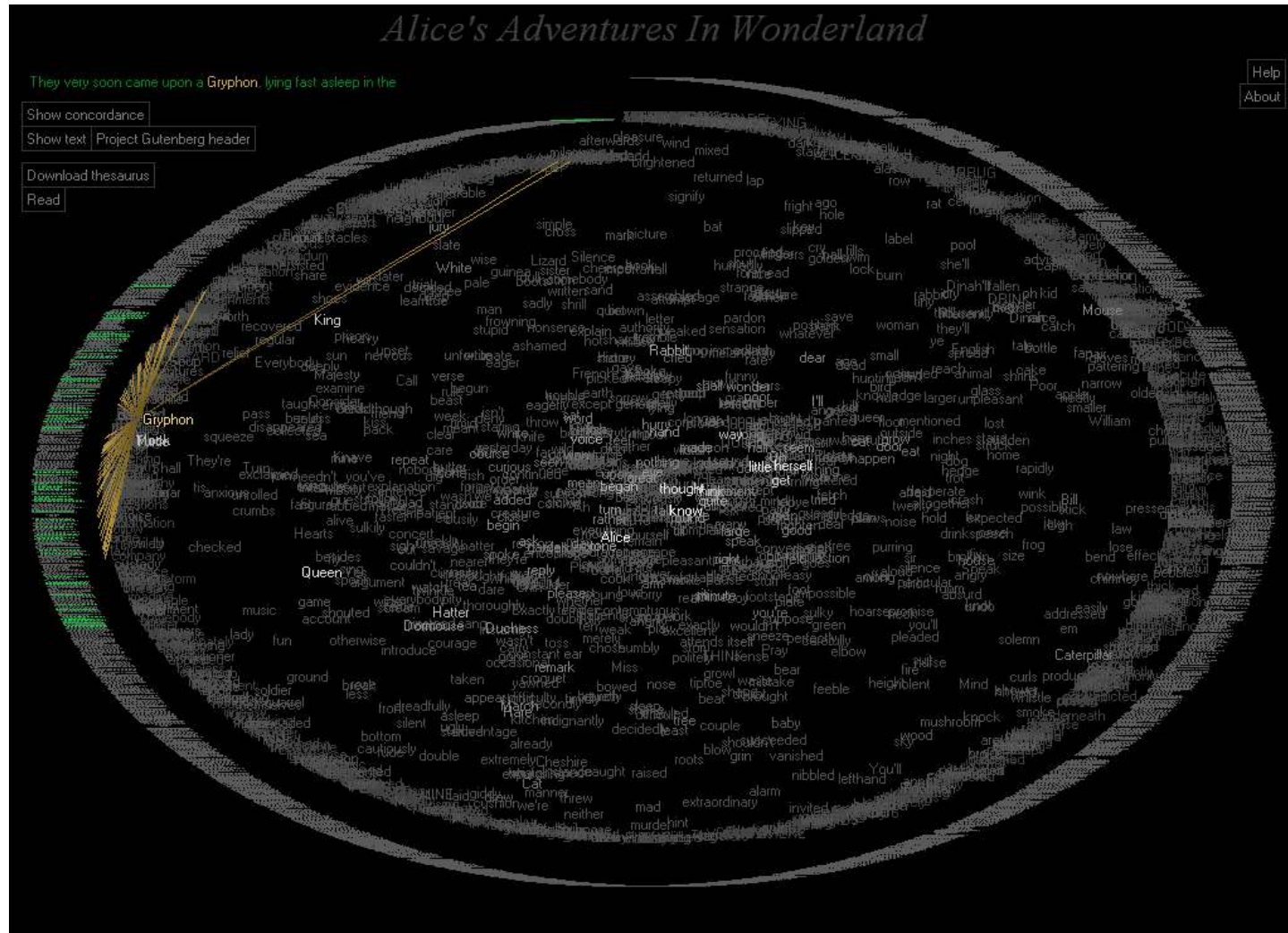
Word Cloud

alone around away bed
behind believe better bit
course **creep** dear
door enough ever eyes fancy
feel getting head house
jennie **john** lie
myself nervous night nothing
paper pattern
quiet quite really
room says seems shall
sleep something
sometimes things
think tired used
wall-paper windows
wish woman wonder yellow

TextArc



TextArc 2



Nora: “Her breast is fit for pearls . . .”

The screenshot displays the Nora software interface. At the top, there is a menu bar with "testing", "New Project", "Open project", and "Help". The "nora" logo and "Logout" link are in the top right corner. On the left, a "Workset" sidebar contains options like "Collections", "Emily Dickin", "Chunk level", "work", "Choose your", "Include", "Prev", "Save work", "Save Work", and "Analysis a". A "run" button is at the bottom left. The main area features a table with columns "Loc", "Usr", "Sys", and "Title". The table lists various electronic versions, with the fifth row highlighted and a pink circle containing the number "5" next to it. The text window on the right shows the selected text: "[p.1] Her breast is fit for pearls, But I was not a 'Diver' - Her brow is fit for thrones But I have not a crest, Her heart is fit for home - I - a Sparrow - build there Sweet of twigs and twine My perennial nest." Below the text is the name "Emily" and a rating scale. The rating scale includes "Please rate this text:" with a 5-point scale (1-5) and "System rating:" with a 5-point scale (green to pink). The interface also includes a "Representative features" sidebar on the right.

Loc	Usr	Sys	Title
	<input type="radio"/>	<input type="checkbox"/>	A 635: An Electronic Version Ese me - Dollie -
	<input checked="" type="radio"/>	<input type="checkbox"/>	A 651: An Electronic Version Her breast is fit for pearls
	<input type="radio"/>	<input type="checkbox"/>	A 653: An Electronic Version As Watchers hang upon
	<input type="radio"/>	<input type="checkbox"/>	A 654: An Electronic Version These are the days when
	<input type="radio"/>	<input type="checkbox"/>	A 655: An Electronic Version Besides the autumn poem
	<input type="radio"/>	<input type="checkbox"/>	A 663: An Electronic Version A slash of Blue - / A sw
	<input type="radio"/>	<input type="checkbox"/>	A 690: An Electronic Version The Soul unto itself / I
	<input type="radio"/>	<input type="checkbox"/>	A 80-7: An Electronic Version The face I carry with /
	<input type="radio"/>	<input type="checkbox"/>	H 223: An Electronic Version Diamond on / ... the Ha
	<input type="radio"/>	<input type="checkbox"/>	H 225: An Electronic Version A full fed Rose
	<input type="radio"/>	<input type="checkbox"/>	H 226: An Electronic Version Ah' Teneriffe! / Retrea
	<input type="radio"/>	<input type="checkbox"/>	H 227: An Electronic Version A Lady red, amid the F
	<input type="radio"/>	<input type="checkbox"/>	H 228: An Electronic Version A little bread, a crust -
	<input type="radio"/>	<input type="checkbox"/>	H 229: An Electronic Version A little / Madness in / t
	<input type="radio"/>	<input type="checkbox"/>	H 231: An Electronic Version All Circumstances are
	<input type="radio"/>	<input type="checkbox"/>	H 232: An Electronic Version All I may - if / small
	<input type="radio"/>	<input type="checkbox"/>	H 233: An Electronic Version Ambition cannot find l

Text

[p.1]
Her breast is fit for pearls,
But I was not a "Diver" -
Her brow is fit for thrones
But I have not a crest,
Her heart is fit for home -
I - a Sparrow - build there
Sweet of twigs and twine
My perennial nest.

Emily

Please rate this text: 1 2 3 4 5
false true

System rating: false true

Representative features

Nora: “A full fed Rose . . .”

The screenshot displays the Nora software interface, which is used for text analysis and feature extraction. The interface is divided into several panels:

- Workset:** A table listing documents with columns for Location (Loc), User (Usr), System (Sys), and Title. The selected document is H 225: An Electronic Version A full.
- Text:** A preview of the selected document's content, showing two paragraphs of text.
- Features:** A panel showing the extracted features for the selected text, categorized by Class and Feature.

Workset Table:

Loc	Usr	Sys	Title
			A 635: An Electronic Version Ese r
	5		A 651: An Electronic Version Her b
	4		A 653: An Electronic Version As W
	2		A 654: An Electronic Version These
	4		A 655: An Electronic Version Basic
			A 663: An Electronic Version A sla
	5		A 690: An Electronic Version The S
			A 80-7: An Electronic Version The
	1		H 223: An Electronic Version Diam
			H 225: An Electronic Version A ful
	1		H 226: An Electronic Version Ah' T
			H 227: An Electronic Version A La
			H 228: An Electronic Version A litt
	5		H 229: An Electronic Version A litt
			H 231: An Electronic Version All C
			H 232: An Electronic Version All I
			H 233: An Electronic Version Amb

Text Preview:

[p.1]
A full fed Rose
on meals of Tint
A Dinner for a
Bee
In process of the
Noon became -
Each bright
Mortality
The Forfeit is
of Creature fair
Itself , adored
before

[p.2]
Submitting for
our unknown sake
To be esteemed
no more

Please rate this text: 1 2 3 4 5
false ----- true

System rating: [green] [light green] [grey] [pink] [black]
false ----- true

Features:

Class	Feature
her	
few	
i	
heaven	

Class	Feature
oh	
you	
days	
still	

Clear Selected Features
ScatterPlot
Show Confidence

Repetitive Strain: Reading *The Making of Americans*

- “Everyone then sometime is a whole one to me, everyone then sometime is a whole one in me, some of these do not for long times make a whole one to me inside me. Some of them are a whole one in me and then they go to pieces again inside me, repeating comes out of them as pieces to me, pieces of a whole one that only sometimes is a whole one in me.”
-

The Remaking of the Reading of *The Making of Americans*

The screenshot displays a text analysis software interface with four main panels:

- Frequent Patterns:** Includes a filtering section with a search box and a 'Search patterns' button. Below are options for ordering patterns by frequency and length, and icons for various trends. A list of frequent patterns is shown, such as 'living' (1820), 'feeling' (1220), and 'beginning' (685).
- Collection Overview:** A line graph showing support (supp.) for various patterns across seven sections. The y-axis ranges from 0 to 3200.
- Sections Overview:** A grid of nine small thumbnail images representing different sections of the text, labeled 1 through 9.
- Text View:** A scrollable text area showing the original text with highlighted segments. The text includes: "Once an angry man dragged his father along the ground through his own orchard. 'Stop!' cried the groaning old man at last, 'Stop! I did not drag my father beyond this tree.'" and "It is hard living down the tempers we are born with. We all begin well, for in our youth there is nothing we are more intolerant of than our own sins writ large in others and we fight them fiercely in ourselves; but we grow old and we see that these our sins are of all sins the really harmless ones to own, nay that they give a charm to any character, and so our struggle with them dies away."

A legend at the bottom maps colors to specific patterns: living (red), feeling (green), beginning (blue), as i was|i was s: (orange), men and women (purple), children (yellow), history (cyan), one of them (black), kind of them (pink), and being in them (light green).

Image courtesy of Tanya Clement.

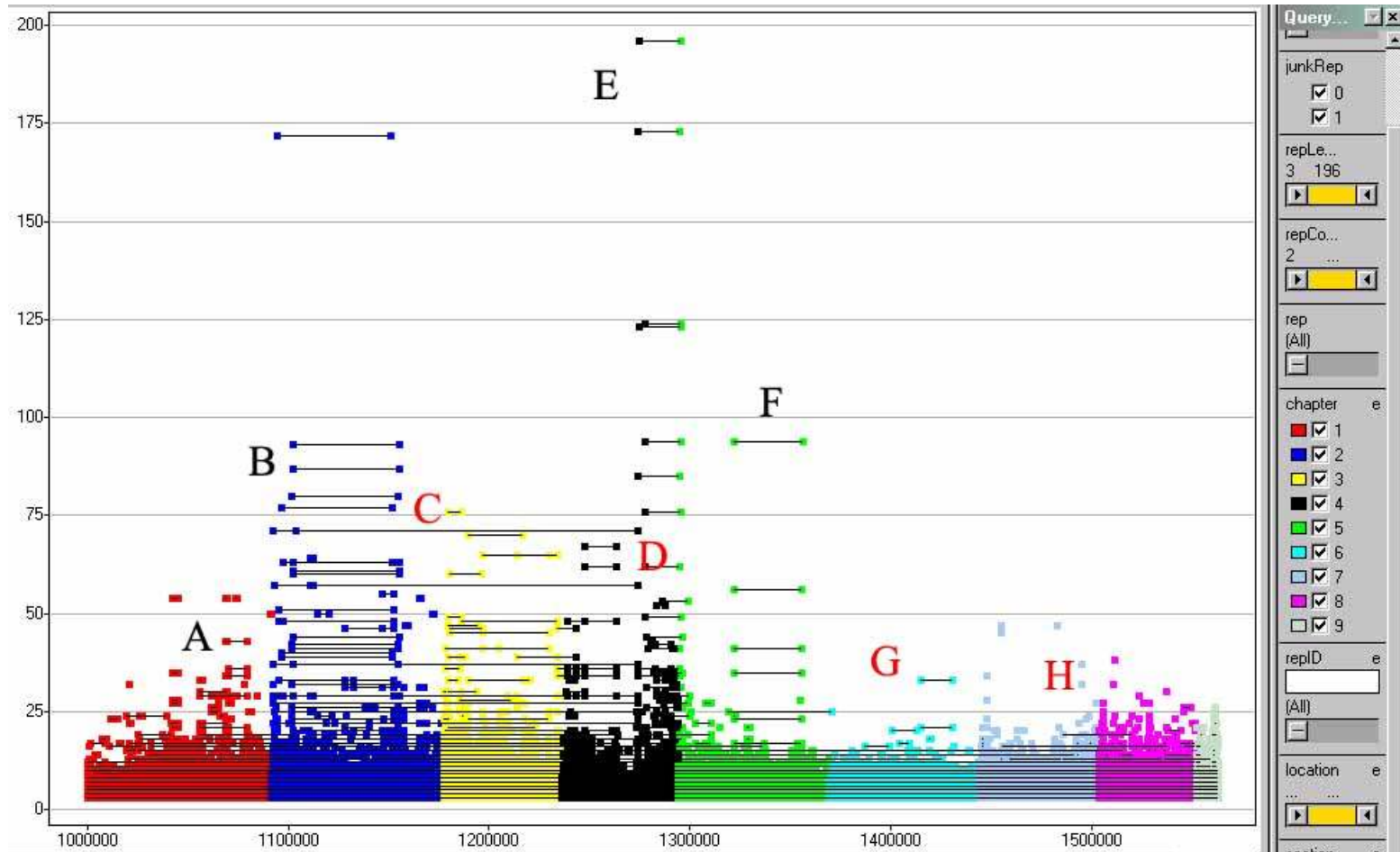
Mind the Gaps (Chapters 1 and 4 Especially)



Detail of narrative gaps, chapters 1-6

Image courtesy of Tanya Clement.

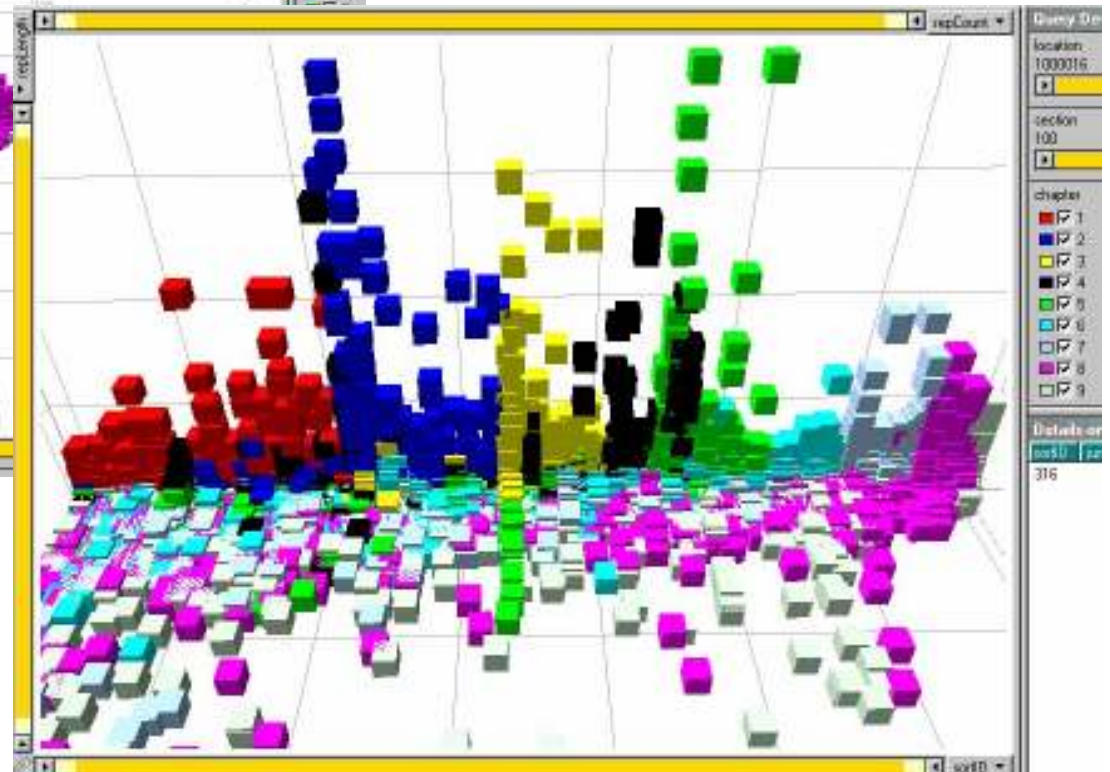
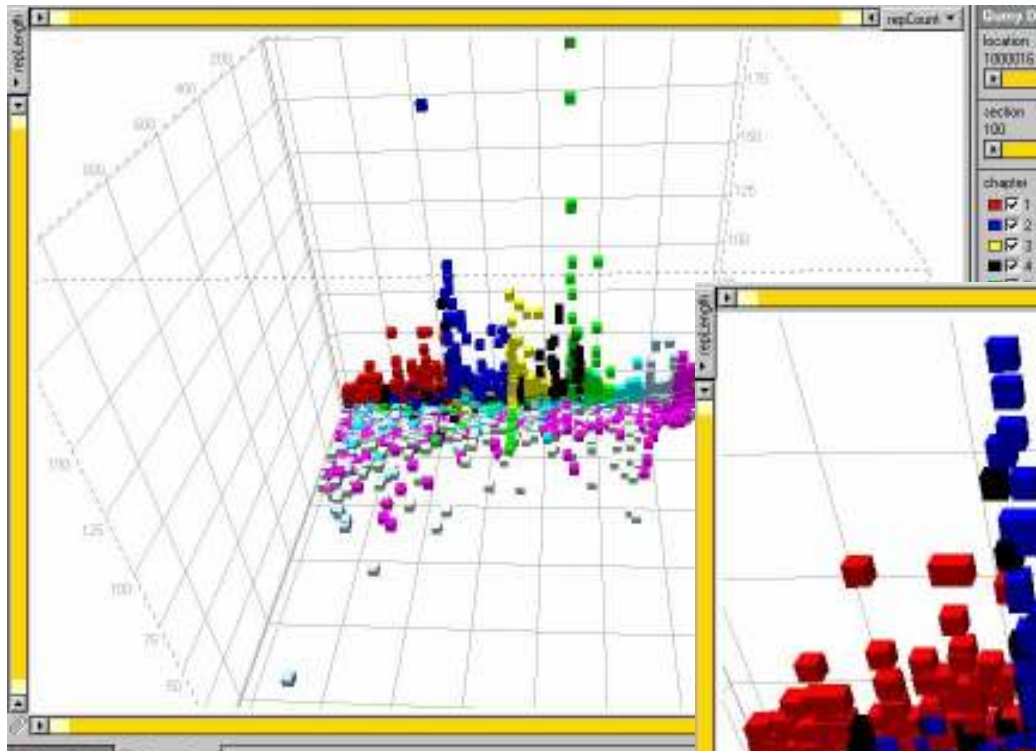
Longest Repetition (Highest on Y-Axis) Exactly in Middle



Repetitions charted for length per location

Image courtesy of Tanya Clement.

Reading the Z-Axis



Above, repetitions charted by ID, length and count (A); Right, repetitions charted by ID, length and count (B)

Images courtesy of Tanya Clement.

The Text's Ring Structure

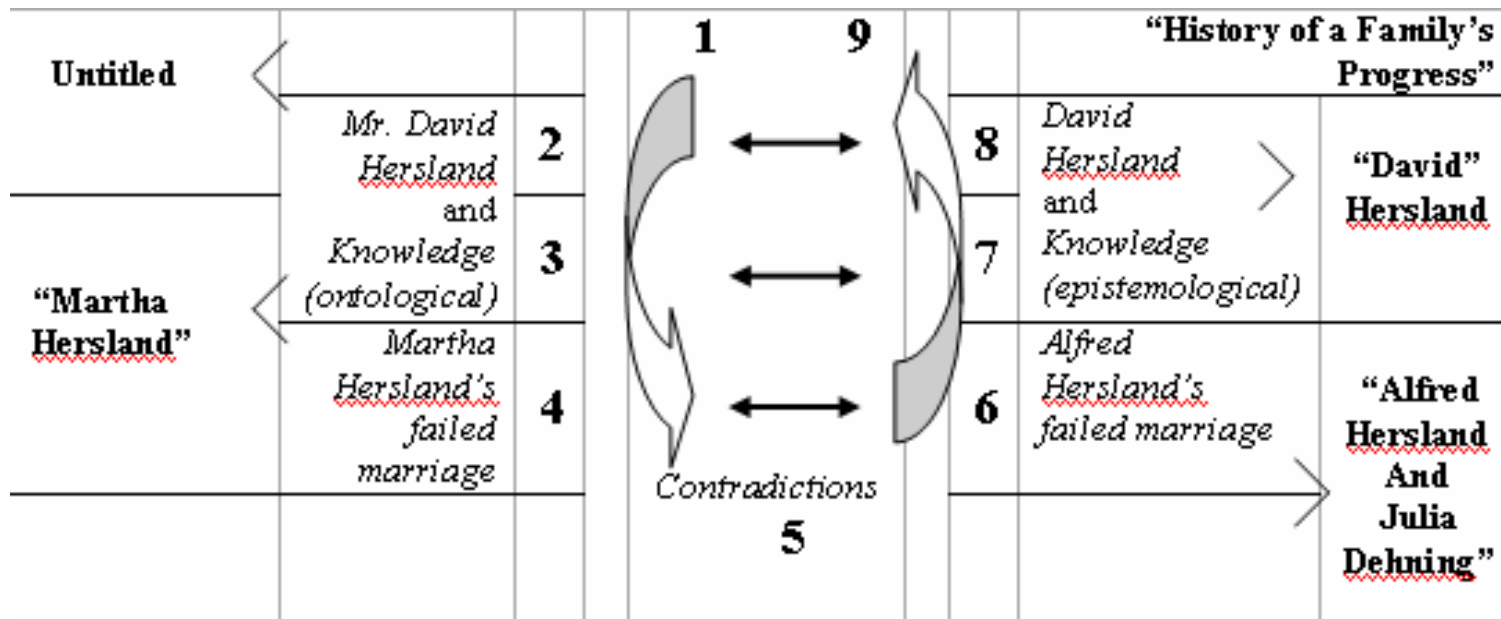
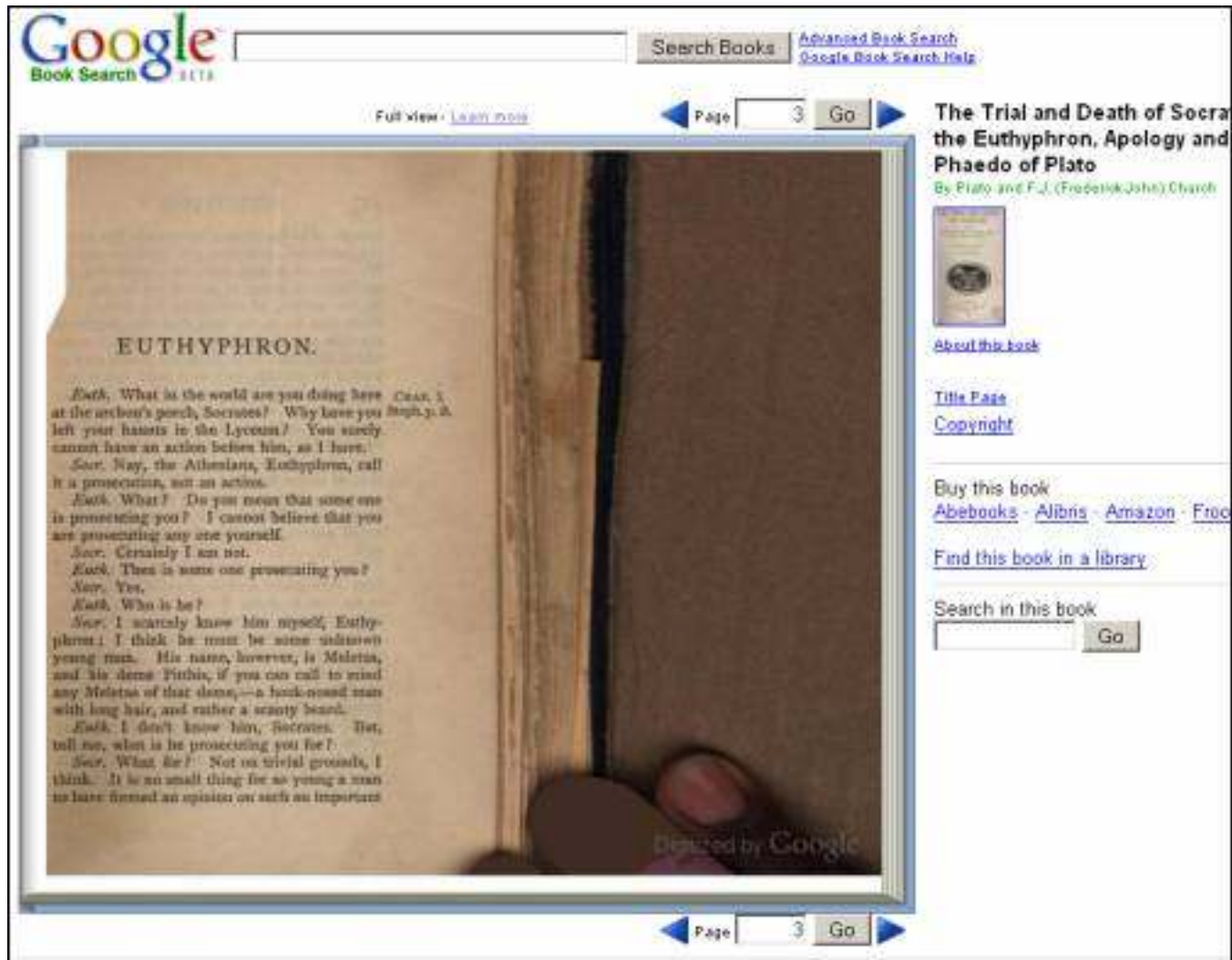


Image courtesy of Tanya Clement.

Conclusion: “Digitization”



The screenshot displays the Google Book Search interface. At the top left is the Google logo with 'Book Search' and 'G.L.T.A.' below it. A search bar is present with the text 'Search Books' and links for 'Advanced Book Search' and 'Google Book Search Help'. Below the search bar, there are navigation options: 'Full view' and 'Learn more'. The main content area shows a digitized page from a book. The page title is 'EUTHYPHRON.' and the text is a dialogue between Euthyphron and Socrates. The text is as follows:

EUTHYPHRON.

Euth. What in the world are you doing here?—*Socr.* I am at the anchor's porch, Socrates?—*Euth.* Why have you left your haunts in the Lyceum?—*Socr.* You surely cannot have an action begun here, as I have.

Socr. Nay, the Athenians, Euthyphron, call it a prosecution, not an action.

Euth. What?—*Socr.* Do you mean that some one is prosecuting you?—*Euth.* I cannot believe that you are prosecuting any one yourself.

Socr. Certainly I am not.

Euth. Then is some one prosecuting you?

Socr. Yes.

Euth. Who is he?

Socr. I scarcely know him myself, Euthyphron: I think he must be some unknown young man. His name, however, is Melitus, and his deme Pitthis, if you can call to mind any Melitus of that deme,—a hook-nosed man with long hair, and rather a scraggy beard.


Euth. I don't know him, Socrates.—*Socr.* But, tell me, what is he prosecuting you for?

Socr. What for?—*Euth.* Not on trivial grounds, I think. It is an small thing for so young a man to have fitted an epistole on such an important

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