

Scholia 2026

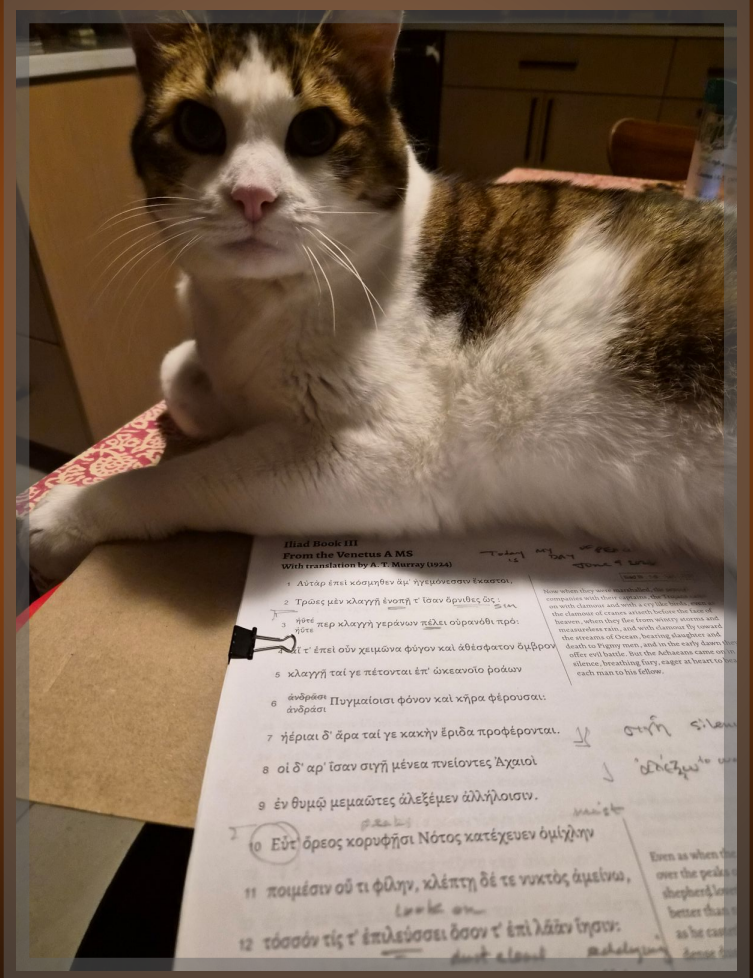
DIY study aids with TEI,
XProc, browser and printer

Wendell Piez

Balisage 2026

Rockville, Maryland

Thursday August 6, 2026



Ready to learn Greek

Long long ago ...

ACH/ALLC 2002, Tübingen, Germany

Scholia demonstration

Robert Musil, "Die Amsel", with aligned translation

Data source - TEI XML

Processing - XSLT 1.0

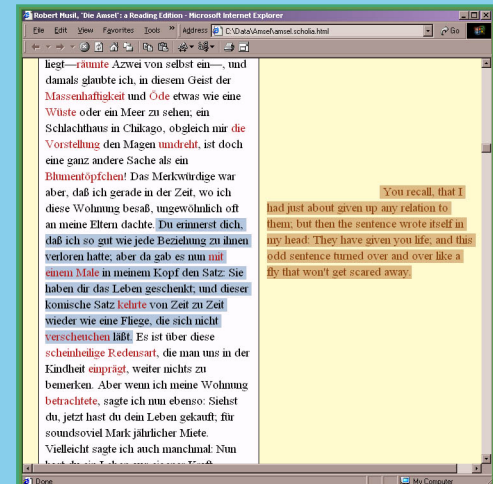
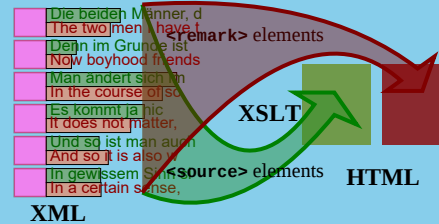
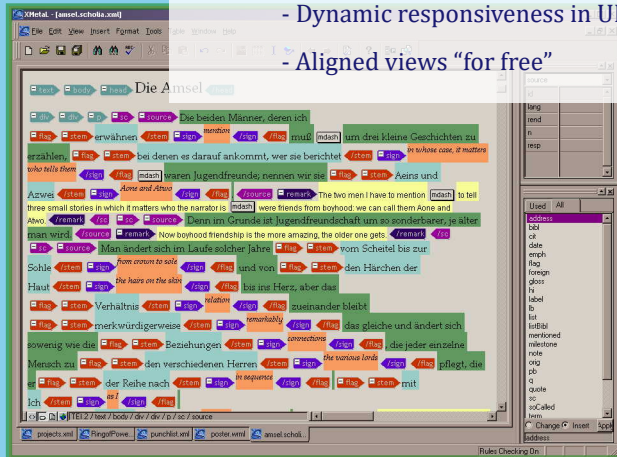
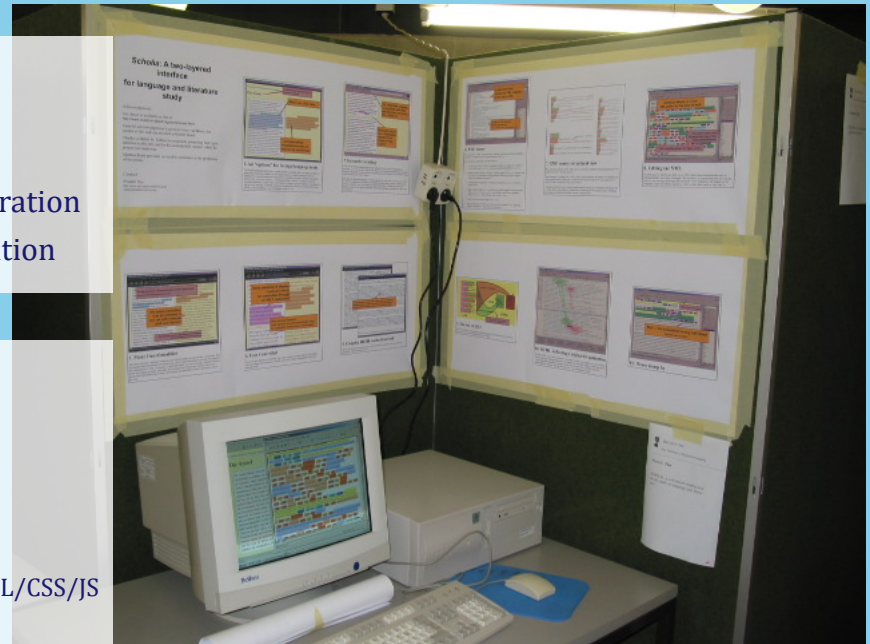
Rendering - HTML/CSS/JS of 2002

Features and capabilities:

- XML/XSLT in browser OR static HTML/CSS/JS

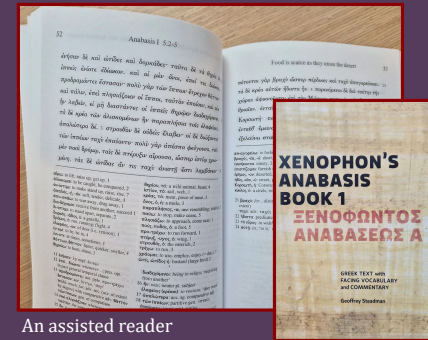
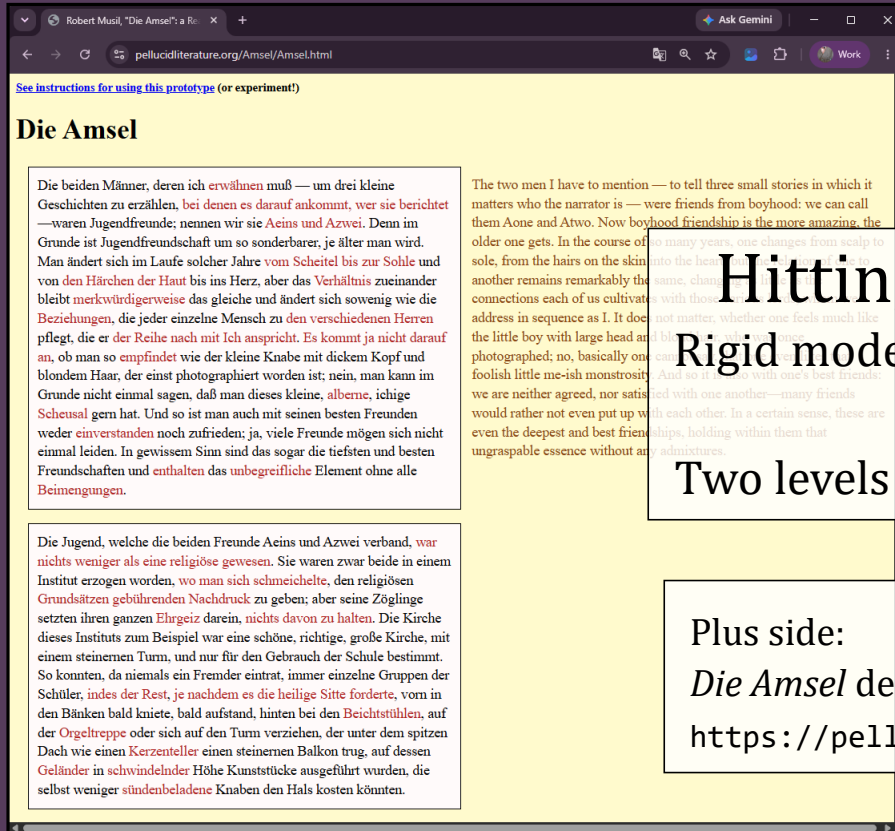
- Dynamic responsiveness in UI

- Aligned views “for free”



The “content” of any medium is always another medium.

— Marshall McLuhan, *Understanding Media* (1964)



An assisted reader

Hitting the Wall in 2002

Rigid model, single hierarchy

Overconstrained alignment

Two levels of annotation are not enough

Plus side:

Die Amsel demo still runs today at
<https://pellucidliterature.org/>

... Fast forward ...

XSLT 2.0, XQuery (2007)

regular expressions; grouping;

tunnel parameters; stylesheet functions;

<< and >> operators

XProc 1.0 (2010), XProc 3.0/3.1 (2022-2025)

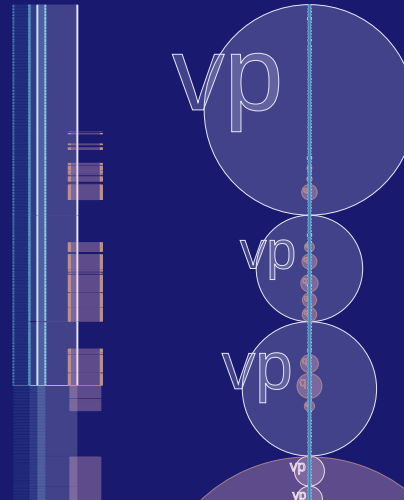
HTML and plain text I/O

XQuery/XPath 3.0/3.1, XSLT 3.0 (2017)

maps, arrays, accumulators

Invisible XML (2022)

Range map of Percy Shelley, *Julian and Maddalo*
a dialogue in rhymed couplets (1819)



LMNL: the Layered Markup and Annotation Language

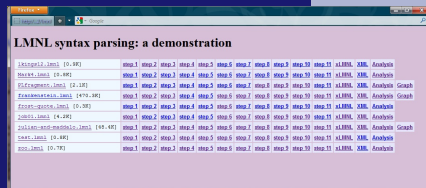
Presented with Jeni Tennison, **Extreme Markup Languages 2001**

Related papers offered 2002-2015

JT, GTN, SD, PD, MBO, JC, CMSMcQ, CH,

FV, AW, OS, MS, ACz, GM, PC, DJB, RD

and many others - you are remembered!



Luminescent demonstration 2012

Luminescent - XSLT 2.0 pipelines

Balisage 2012, Digital Humanities 2013

Frankenstein Trans formed (LMNL range map 2015)

Electronic Verse Engineer (EVE) (SaxonJS 2022)

Discovering new requirements

The world has also changed

Better tools making better resources - network effects

I could be refining and codifying Scholia and its models and interfaces ...

... *or* ... I could be doing something even more interesting

Assisted (graded) reader

The goal is language acquisition

(not reading as such, but the ability to read)

Assumes a curriculum and probably a classroom

Amazing advances

Assisted readers and their functional equivalents
are now not so hard to find ...

Autodidactic Transcription?

Focused on a literary work, not a course of study

For an audience of one

Not so much a medium (electronic or other) as a workbench

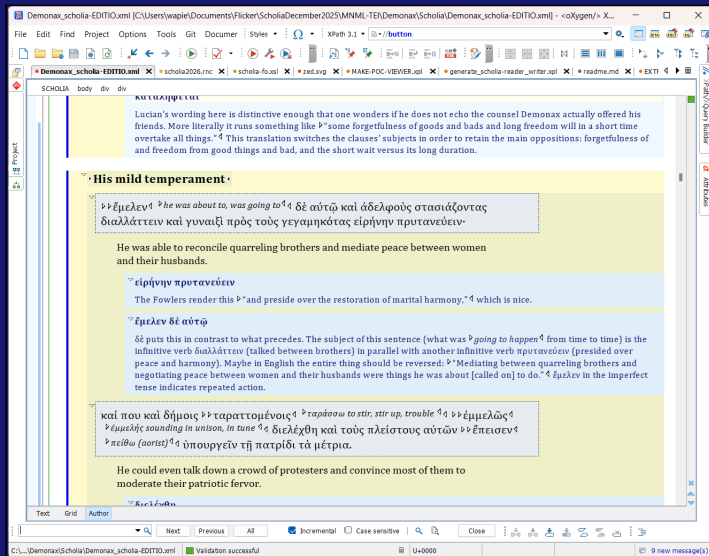
Research, translation, commentary, questions

Building a reader is a means to an end

... Learn by teaching (oneself) ...

Scholia 2026

Free to speed up by slowing down



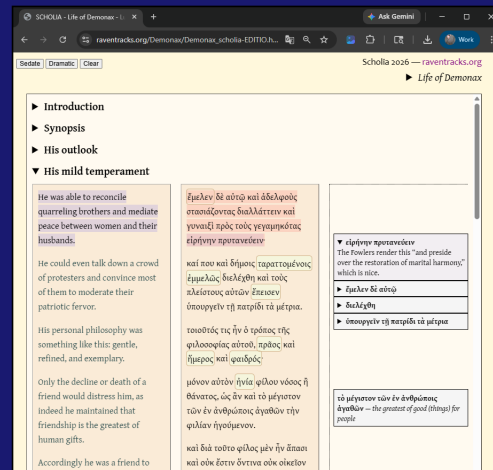
In addition to annotations at word and phrase level the Scholia 2026 model supports *glosses* attached to arbitrary ranges, even when overlapping

See the **Life of Demonax** at <https://raventracks.org>

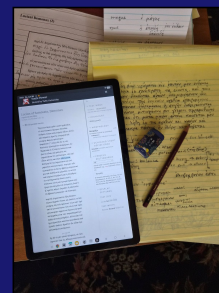
Initially a reboot, but things got out of hand

... To question, research, record, transcribe

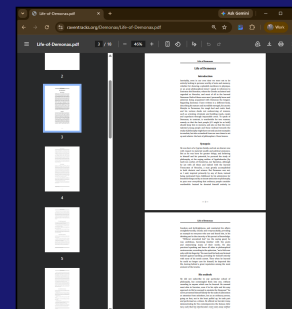
Using browser, printer, pencil, page



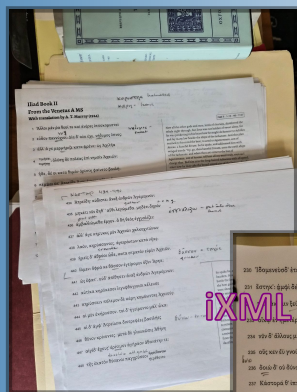
Demonax workflow



Spin-off English translation in PDF



Instead of taking form, the technology fills gaps

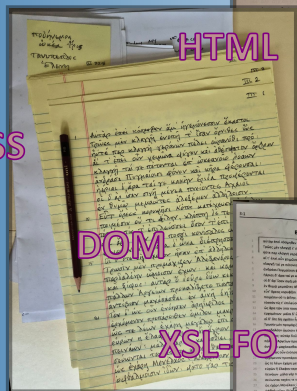


TEI

XProc

XSLT

iXML



HTML

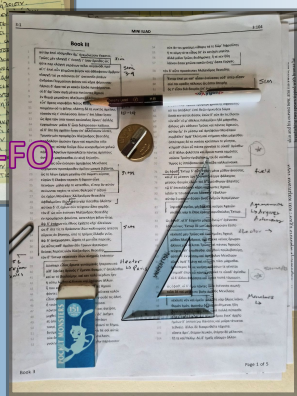
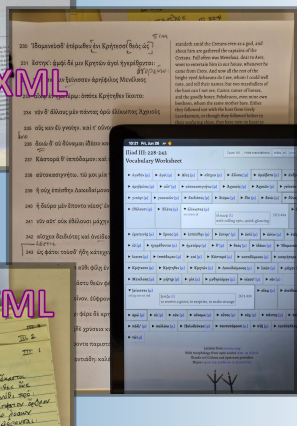
CSS

DOM

XSL-FO

SVG

PDF



Drawing on amazing resources for Homer and Ancient Greek

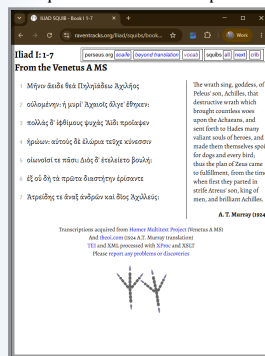
Perseus (Tufts University); PerseusDL (Github); Homer Multitext Project;

Logeion/Morpho (U Chicago); Scaife Reader (Perseus); Alphaeos.org; diogen.es,

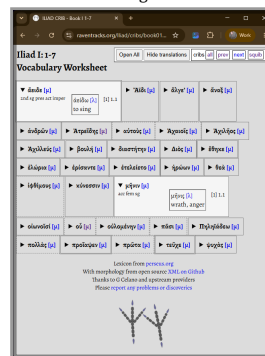
TEI, EpiDoc, all DH, the public web, and Project Gutenberg

ΟΜΗΡΟΥ ΙΛΙΑΣ

Squibs: text for transcription



Cribs: running vocabularies



<https://raventracks.org>

Scriptorium Technique

Learn your text by transcribing it

Developed by Alexander Arguelles

Popularized by Luke Ranieri (polyMATHY on YouTube)

To learn to use something, make something

Overlap happens

[BOOK [n]1{}]

[para]

[prayer [to]Muse{}][1 [n]1.1{}]μῆνιν ἄειδε θεὰ Πηληϊάδεω Ἀχιλῆος{1}

[1 [n]1.2{}]οὐλομένην, ἣ μυρί' Ἀχαιοῖς ἄλγε' ἔθηκε,{1}

[1 [n]1.3{}]πολλὰς δ' ἰφθίμους ψυχὰς Ἀΐδι προΐαψεν{1}

[1 [n]1.4{}]ἥρώων, αὐτοὺς δὲ ἐλώρια τεῦχε κύνεσσιν{1}

The Laminator - XProc/iXML/XSLT for LMNL

[1 [n]1.5{}]τοῖσι καὶ Διὸς δ' ἐτελείετο βουλή,{1}

[1 [n]1.6{}]ἔτεφεν γὰρ Πηλεΐδῃ ἄλγεα πολλὰ κέρωνε{1}

[1 [n]1.7{}]Ἀτρεΐδης τε ἄναξ ἀνδρῶν καὶ δῖος Ἀχιλλεύς.{1}[prayer]

{para}

[para] <https://github.com/wendellpiez/EpicMarkup/>

[1 [n]1.8{}]τίς τ' ἄρ σφωε θεῶν ἑριδι ξυνέηκε μάχεσθαι;{1}

[1 [n]1.9{}]Λητοῦς καὶ Διὸς υἱός· ὃ γὰρ βασιλῆϊ χολωθεῖς{1}

[1 [n]1.10{}]νοῦσον ἀνὰ στρατὸν ὄρσε κακὴν, ὀλέκοντο δὲ λαοί,{1}

[1 [n]1.11{}]οὔνεκα τὸν Χρῦσῃν ἠτίμασεν ἀρητῆρα{Epic Markup presents

[1 [n]1.12{}]Ἀτρεΐδης· [scene [set]Achaian ships{}]ὃ γὰρ ἦλθε θοὰς ἐπὶ νῆας Ἀχαιῶν{1}

[1 [n]1.13{}]λυσόμενός τε θύγατρα φέρων τ' ἀπερείσι' ἄνδρα, τῇ

[1 [n]1.14{}]στέμματ' ἔχων ἐν χερσὶν ἐκηβόλον ἄνδρα{The Iliad of Homer

[1 [n]1.15{}]χρυσέῳ ἀνὰ σκήπτρῳ, καὶ λίσσαστο πάντας Ἀχαιοὺς.{1}

[1 [n]1.16{}]Ἀτρεΐδα δὲ μάλιστα δύω, κοσμητόρε λαῶν·{1}

[speech [by]Chryses{}][to]Agamemnon, Menelaos, Achilleus{}]

[1 [n]1.17{}]Ἀτρεΐδαι τε καὶ ἄλλοι εὐκνήμιδες Ἀχαιοί{Making TEI, HTML, PDF

[1 [n]1.18{}]ὕμῃν μὲν θεοὶ δοῖεν Ὀλύμπῳ δῶκετ' ἔγοντες{1}

[1 [n]1.19{}]ἐκπέρσαι Πριάμοιο πόλιν, εὐ δ' οἴκαδ' ἵκεσθαι·{1}

[1 [n]1.20{}]παῖδα δ' ἐμοὶ λύσαιτε φίλην, τὰ δ' ἄλλα χερσὶν ἑσέοις{1}

[1 [n]1.21{}]ἄζόμενοι Διὸς υἱὸν ἐκηβόλον Ἀπόλλωνα·{1}and more ...

{speech}{para}

[para][1 [n]1.22{}]ἔνθ' ἄλλοι μὲν πάντες ἐπευφήμησαν Ἀχαιοὶ{1}

[1 [n]1.23{}]αἰδεῖσθαι θ' ἱερὰ καὶ ἀνλὰ δένθαι ὄποινα·{1}

Exploratory LMNL markup

Based on PerseusDL sources (cc-by-sa)

XProc pipelines with XSLT and iXML

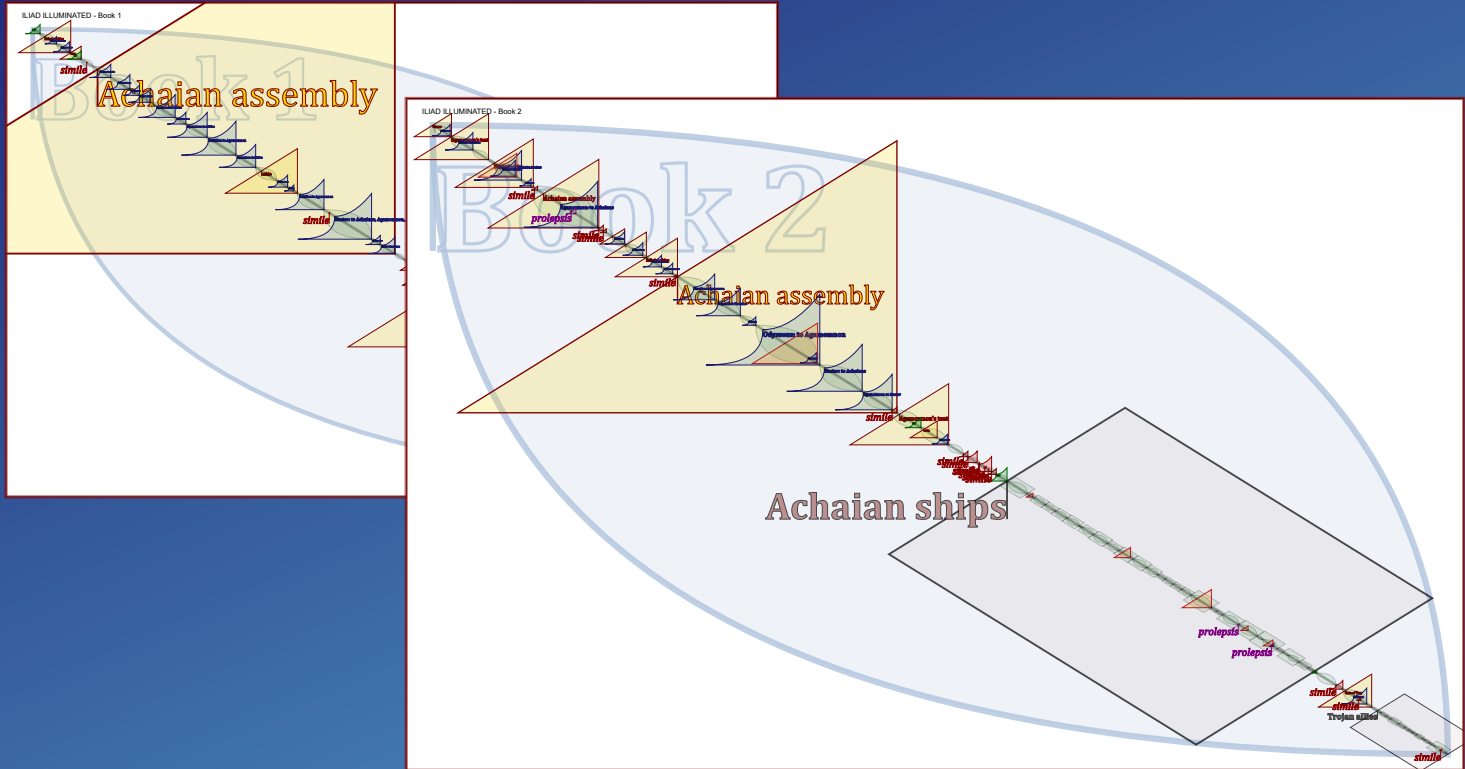
Making TEI, HTML, PDF

MYTHOI XML version (narrative structure)

SVG range map illustrations

Winged words

The fractal structure of Homer's *Iliad*



LMNL ranges can be rendered as shapes along an axis.

Each shape shows where and how far a range extends within the text.

In this document, ranges are tagged for book, line, para, scene, speech, tale, simile and more.

Today's topic



C. M. Sperberg-McQueen *XSLT Workshop ACH/ALLC 2002 Tübingen*
Inviting us to think about document transformations

Why read the Iliad?

Some one said: "The dead writers are remote from us because we know so much more than they did." Precisely, and they are that which we know.

— T. S. Eliot, "Tradition and the Individual Talent" (1919)

The fractal structure of Homer's *Iliad*

Learn by making

Open data and open tools really work

(and thanks are due)

Write it down! The head learns with the hands

We have only barely started

with markup technologies

Thank you!

Projects mentioned

Die Amsel demonstration 2002

<https://pellucidliterature.org>

Scholia 2026: Lucian's *Life of Demonax*

An assisted reader

With a PDF English translation (by W Piez)

<https://raventracks.org>

(new!) *Platonic Markup*

Excerpt from D. Laertius, for Allen Renear

Homer Scriptorium resources

Also at <https://raventracks.org>

Laminator - XProc/XSLT/iXML for MNML LMNL

<https://github.com/wendellpiez/Laminator/>

EpicMarkup - Homer's *Iliad* in LMNL

<https://github.com/wendellpiez/EpicMarkup/>

Ready to learn XSLT



PDF slides were produced from XML source using XSL, SVG, and XProc.

All photographs are by the author.