

# Pliny: 4 perspectives

John Bradley  
Centre for Computing in the Humanities  
King's College London  
john.bradley@kcl.ac.uk



## Acknowledgements

- *Pliny's* development was made possible by the provision of research leave for me in 2005-6 at **King's College London**.
- I am deeply grateful to KCL, and in particular to the head of CCH, **Harold Short**, for making this possible.
- *Pliny* has recently been supported by **The Mellon Foundation** through their MATC award program. I am particularly grateful for the recognition that this represents.
- I am also grateful to **Willard McCarty** with whom I have spoken from time to time about scholarly research and practice, and who has given me many useful insights.

## What is *Pliny*?

- *Pliny* is a piece of software that I developed over the past few years as a kind of thought-piece about tools for humanities scholarship.
- *Pliny* is about two things. It explores
  1. some of the potential that arises out of developing software that supports annotation and notetaking for the Humanities, and
  2. some of the issues for Graphical User Interfaces (GUI) that should be considered when developing modular software toolkits.

3

## 2005 Summit on Digital Tools in the Humanities

- “only about six percent of humanist scholars go beyond general purpose information technology and use digital resources and more complex digital tools in their scholarship”. (pg 4)
- “although humanists are on the verge of ... a revolutionary change in the scholarship... that such a revolutionary change has not yet occurred”. (pg 5).

4

# Jerome McGann: digital technology

- "The general field of humanities education and scholarship will not take up the use of digital technology in any significant way until one can clearly demonstrate that these tools have important contributions to make to the exploration and explanation of aesthetic works."

□ McGann, J. (2002). "Ivanhoe Game Summary".  
<http://www.speculativecomputing.org/ivanhoe/framework/summary.html>  
(accessed September 2007).

# Pliny: what is it?



- it is a thought-piece:
  - perhaps wrongheaded in various ways
    - ... although a time was spent on research into what Humanities scholarship was like before Pliny was built
  - Pliny is meant to promote discussion within the DH about this area.

6

## What is Pliny? (I)

- A software tool to support notetaking and interpretation development in traditional humanities research.
- Pliny, as a piece of software, tries to be “Englebartian”.

7 7

## *Douglas Englebart*

- Englebart’s work in the 1960s and 70s was fundamental to how most use computers today. It provided foundational thinking about the “Graphical User Interface” and such technologies as the mouse.
- An important element of Englebart’s thinking related to thinking about how tools might assist human intellectual endeavour.

8 8

# Douglas Engelbart and H-LAM/T

- H-LAM/T: “Human using Language, Artefacts, Methodology, in which he is Trained” (*Augment Report*, p. 11)

“He believed that the computer could **support model-building** and problem-solving by humans, could **enhance or augment** what humans can deal with in their own minds, and need not take away or reduce human’s involvement in the material that represents the problem.”

- (Bradley (2003). “Finding a Middle Ground between ‘Determinism’ and ‘Aesthetic Indeterminacy: a Model for Test Analysis Tools” in *Literary and Linguistic Computing* Vol. 18 No 2.

# The Augment Project

- By "augmenting human intellect" we mean increasing the capability of a man to approach a complex problem situation, to gain comprehension to suit his particular needs, and to derive solutions to problems. Increased capability in this report is taken to mean a mixture of the following: more-rapid comprehension, better comprehension, the possibility of gaining a useful degree of comprehension in a situation that previously was too complex, speedier solutions, better solutions, and the possibility of finding solutions to problems that before seemed insoluble.
- ...We refer to a way of life in an integrated domain where hunches, cut-and-try, intangibles and the human "feel for the situation" usefully co-exist with powerful concepts, streamlined terminology and notation, sophisticated methods, and high-powered electronic aids. ... **the first phase of [the] program [is] aimed at developing means to augment the human intellect. These "means" can include many things -- all of which appear to be but extensions of means developed and used in the past to help man apply his native sensory, mental, and motor capabilities...** (p.1)

- Englebart, Douglas. (1962). *Augmenting Human Intellect: A conceptual framework*. Stanford CA: Stanford Research Institute. Online at <http://www.bootstrap.org/augdocs/friedewald030402/augmentinghumanintellect/AHI62.pdf> (accessed March 2007). (Augment report p 1)

## H-LAM/T, when done properly, makes the tool itself disappear!

- “You’re probably waiting for something impressive. What I’m trying to prime you for, though, is the realization that the impressive new tricks all are based upon lots of changes in the little things you do. This computerized system is used over and over and over again to help me do little things – where my methods and ways of handling little things are changed until, lo, they’ve added up and suddenly I can do impressive new things” (p. 89)

■ Englebart, D. (1962)

11 11

## Englebartian software: word processor

- The word processor
  - A tool to support writing
  - It operates in ways that fit so closely with the process of writing that it seems to add little or nothing to this process
  - Yet, almost all writers use a word processor.
  - Why?
- A word processor supports writing in an Englebartian way.
  - What would an Englebartian tool look like that would support research?

12 12

## What to researchers do?

- “Until very recently, research methods were not widely discussed in English studies ... – research was what you did, and the best you could hope for was a brief introduction to the vagaries of the library.”
- “significant numbers of English studies academics in the UK” are still “surprisingly in- or possibly non-articulate about what they do to achieve ... results”
  - Gabriele Griffin (ed.) *Research Methods for English Studies*. Edinburgh: Edinburgh University Press

13

## Reading and Scholarship

- "Users have been introduced to all sorts of interesting things that can be done with computer analysis or electronic resources, but very few of them have been asked what it is that they do, and want to keep doing, which is **to study texts by reading them.**" (highlighting mine)
  - Warwick, C. (2004). "Print Scholarship and Digital Resources" in Susan Schreibman, Ray Siemens and John Unsworth (eds). *A Companion to Digital Humanities* Oxford: Blackwell Publishing. pp 369-370.

14 14

## Characteristics of scholarly research

- For many researchers, scholarly research is:
  - Derived from extensive reading
    - Across a broad range of sources (primary and secondary)
    - Intensive reading of key sources
  - ... and involves notetaking and annotation.
  - Notes contribute to the thinking about the materials that have been read.
  - Notes contribute to the work involved in publication, although this involves some degree of organisation of notes.
    - From William S. Brockman, Laura Neumann, Carole L. Palmer, Tonya J. Tidline (December 2001): *Scholarly Work in the Humanities and the Evolving Information Environment*, a report from the Council on Library and Information Resources.

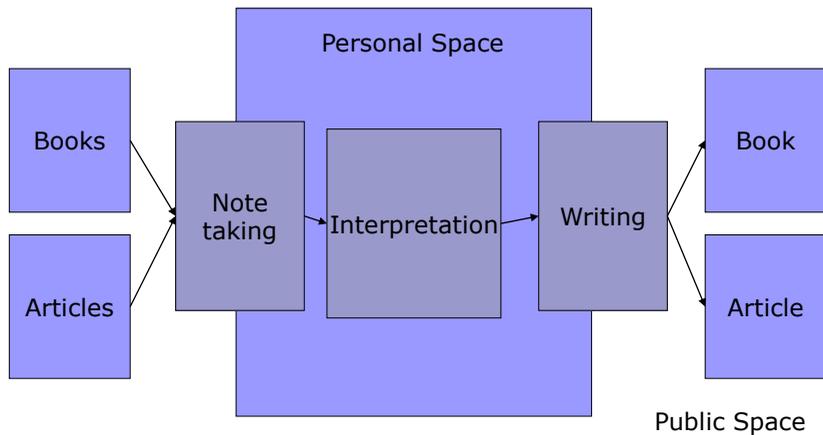
16

## Three Phases of Research

- Reading and annotation (note-taking)
- organising notes to find relationships
  - this is usually a personal, internal activity
  - organising principles for the notes emerge from intensive and extending thinking about the material and ones reaction to it.
    - naming and relating.
  - how can the computer help here?
    - "meta-structure"
- publishing (in an article)
  - making public what one has found

17

## Interpretation development as a personal activity



18

## Scholarly Reading involves potentially many documents

- “The scholar who claims to be current and knowledgeable in a field must have read closely and be intimately familiar with a large number of particular works”

- Bates, Marcia J. 1996a. Document Familiarity, Relevance, and Bradford’s Law: The Getty Online Searching Project Report No. 5. *Information Processing & Management* 32 (November): 697-707.

Quoted in Brockman *et al* p 7

19

## Scholarly Annotation

- “If ... I really have to study, learn and absorb what’s in [something I’m reading], I make a photocopy and I write in the margins. And I underline, too. But I almost never underline without writing in the margin...Otherwise, I can find myself simply underlining, rather than absorbing”

■ quote in Brockman *et al* 2001

- Also evidence of this in Catherine Marshall’s research

20

## Notetaking: a hidden phase of knowledge transmission

- “Note taking constitutes a central but often hidden phase in the transmission of knowledge” (p. 85)
- “... Michel Foucault reportedly expressed a desire to study copybooks of quotations because they seemed to him to be ‘works on the shelf...not imposed by the individual’; they promised to give quasi-psychoanalytic insight into the thinking of the individual reader free to choose what was worthy of attention” (p. 88)

- Blain, Ann (2004). “Note Taking as an Art of Transmission”. In *Critical Inquiry* 31. University of Chicago.

21 21

# Notetaking: for web pages

The screenshot shows a Notepad application window titled "Notepad" with a menu bar (File, Edit, Help) and a toolbar. The main text area displays a web page from Old Bailey Online, titled "of the OLD BAILEY London's Central Criminal Court, 1674 to 1834". The page content includes a search bar, navigation links, and a case entry for "Breaking Peace > wounding, 25th April 1677". The case details include a reference number (t16770425-6), an offense description, and a verdict of "Death". The text of the case describes a young man of Enfield, being Fellow-servant with a very pretty young maid, pretending Love to her, but meeting with a Repulse, he consults his Sister, who advised him to get to bed to her, and get her with Chalde, and then leave her. This She-devil's Counsel, it seems, the Maid's Vertue hindered him from putting in execution, and therefore having all his hopes like to wither, they take new measures. There was no body in Family but these two and an aged Master and Mistress, who being both in bed, on the 20th of February last, as this rascall Virgin and her treacherous Sweet-heart were sitting together, his own Brother and Sister came and knock'd and call'd him by his name, who open'd the door and let them in, but no sooner were they enter'd, but this sister, more like a Friend than a Woman, fell upon this harmless Maid, and with a Knife, whilst the other Brother held her, and in a most aduante manner cut out one of her Eyes, the sight whereof she has lost, cut her Nose towards the upper part so desperately, that two bones, produced in Court, were since taken out of it, her Lips they slash'd so, that with much difficulty, and not yet perfectly, she can use them in speech, Two of her Teeth they beat out, gave her a lamentable wound in the Neck, and two other Bones a great number in the Head, off which were

Notes on the right side of the Notepad window:

- N. Whether guilty**: The description of the assault here is entirely negative, and the accused are declared to "deservedly receive Sentence of death". See, however, the other description (t16770425-6) for an alternative view.
- N. Statute against fornication**: The report of the trial states that this was the first application (President-precursor?) of a new statute against fornication.

At the bottom right of the Notepad window, the number "22" is visible.

The screenshot shows a Notepad application window titled "Vico Frontispiece" with a menu bar (File, Edit, Help) and a toolbar. The main text area displays an allegorical image from Giambattista Vico's "The New Science" (1725). The image depicts a globe on a stand, with a figure sitting on a globe representing the world of nature. The various objects that represent the civil world are arranged in a line together at the bottom of the image. The arrangement in space is a part of the technique used here.

Notes on the right side of the Notepad window:

- N. Vico Frontispiece, Intro...**: GR and I used this image in our Paris Paper (approx. 1994). We were struck by Vico's use of graphical techniques to make philosophical points. Vico himself says that the frontispiece contains the essence of the arguments in his rather philosophical book.
- N. Vico Frontispiece, his intr...**: "Vico says in his introduction that the allegorical picture will both help the reader conceive of the idea of his work before reading it and more easily reduce it to memory after having read it. Note that although most of the intellectual material is represented via purely allegorical methods, one of the tools in the allegorical arsenal is space itself -- the arrangement of the elements plays a role in defining the associations between them. Metaphysics is standing on a globe representing the world of nature. The various objects that represent the civil world are arranged in a line together at the bottom of the image. The arrangement in space is a part of the technique used here."

Notes on the left side of the Notepad window:

- N. The Trinity**: [Redacted]
- N. Metaphysics**: [Redacted]
- N. Natural World**: [Redacted]
- N. Vico Frontispiece**: The figures at the bottom of the image are place at the "bottom" because of the symbolic significance of the bottom. Their appearance together also implies that they are in some important way, related.
- N. The Civil World**: [Redacted]

At the bottom right of the Notepad window, the number "23" is visible.

Frontispiece to Giambattista Vico, *The New Science* (1725)

# Notetaking: Acrobat/PDF file

FIGURE 4. This manuscript by Abraham Ortelius (1527–98), author of many geographical atlases and dictionaries, is not a draft of any of his published works but a collection of notes under alphabetical/geographical headings. On the right side of each page notes are entered on slips of paper glued into the notebook in alphabetical order, following a common early modern method of alphabetization: the left side of the page is left blank for additional notes to add to the alphabetical entries. The notebook already resembles the kind of work for which it gathers material—the encyclopedic dictionary. Reproduction of an opening of Ortelius, "Thesaurus geographicus," Plantin-Moretius Museum (Antwerp) MS 295, from Gilbert Tournoy, "Abraham Ortelius et la pensée politique de Jacques van Baerle," in Robert W. Karrow et al., *Abraham Ortelius (1527–1598), cartographe et humaniste* (Turnhout, 1998), pp. 163–64; reproduction by Harvard University Media Services.

or Islamic), suggesting their very broad applicability.<sup>4</sup> At the other extreme, note taking is of course very personal, dependent on the judgment and commitments peculiar to each individual note taker, which are not necessarily shared with others. Indeed, Michel Foucault reportedly expressed a desire to study copybooks of quotations because they seemed to him to be **works for on the self—not imposed on the individual—they promised to give quasi-psychoanalytic insight into the thinking of the individual reader free to choose what was worthy of attention.**<sup>5</sup> To the extent that reading

**Note taking on the self depends on the judgment and interests of the note taker—not necessarily shared by others.**

**Note taking on the self: Foucault wanted to study copybooks because they give psychoanalytic insight into the thinking of the reader.**

4. For an introduction to the Chinese *zhihu*, see J.-P. Diény, "Les Encyclopédies chinoises," in *L'encyclopédisme. Actes du colloque de Caen, 12–18 janvier 1987*, ed. Annie Boag (Paris, 1991), pp. 109–20; on Islamic methods see Franz Rosenzweig, *The Technique and Approach of Islamic Scholarship* (Rome, 1947).

5. Michel Foucault, "On the Genealogy of Ethics," quoted in Stuart Sherman, *Telling Time: Clocks, Diaries, and English Diurnal Form, 1660–1985* (Chicago, 1996), p. 204 n. 22.

Ann Blair (2004), "Note Taking as an Art of Transmission". In *Critical Enquiry* Vol 31, Chicago: University of Chicago 24

# Notetaking for non-digital objects

Wittig 1978: CBA: limits of NewCrit base

Wittig 1978: CBA: a synthesis

Three notions of text predominate: first, the notion that the text is a linear entity; second, the idea that the text is a one-time, completed work, formally confined to its graphic representation, the printed page.

Wittig 1978: CBA: A's Epistemology of New Criticism

"This failure derives, I think, from the fact that the computer, as an adjunct in literary analysis, has been used consistently within what we are beginning to recognize as the limited conceptual framework of New Criticism." (p. 211)

Wittig 1978: CBA: text as linear

text is linearly defined -> "syntagmatic analysis" (Allen Dundes), or "metonymic" analysis (Roman Jakobson)

Claude Lévi-Strauss points out ...

"emphasizes [...] the diachronically-ordered components of the text" ... "invariably surface-

Wittig 1978: reading and semiotics

Wittig 1978: Meaning this reading

Jonathan Culler's article (1976), Beyond Interpretation: The Prospects of Contemporary Criticism, in Comparative Literature

Wulfgang Iser's "The Implied Reader" (chap 11)

Wittig 1978: CBA: the computer as a tool

If we can use the computer to use to shape new directions in the exploration of human interaction with the literary text [...] then the computer will truly have become "the telescope of the mind." (p 214)

Note Content: here a bibl reference to the article

Notes taken during reading of the article

Containment organises them into two topics

25

## Reading and Interpretation

- “reading as an involving process, not as interpretation or decoding. It is reading as an experience and not as mere collection of data: it can lead to interpretation, but only by way of generating reactions that we subsequently seek to describe or explain”
  - John Lavignino. “Reading, Scholarship, and Hypertext Editions”, in *The Journal of Electronic Publishing*, Sept 1997 Vol 3 No 1.

26

## What is Pliny? (II)

- A device to help think about some aspects of what interpretation is about in the humanities.
- As a piece of research, then, it builds on the research of others:
  - Computer Science: Spatial Hypertext, digital annotation: C Marshall et al
  - Social Sciences: Qualitative Analysis Tools, Nud\*ist, NVivo

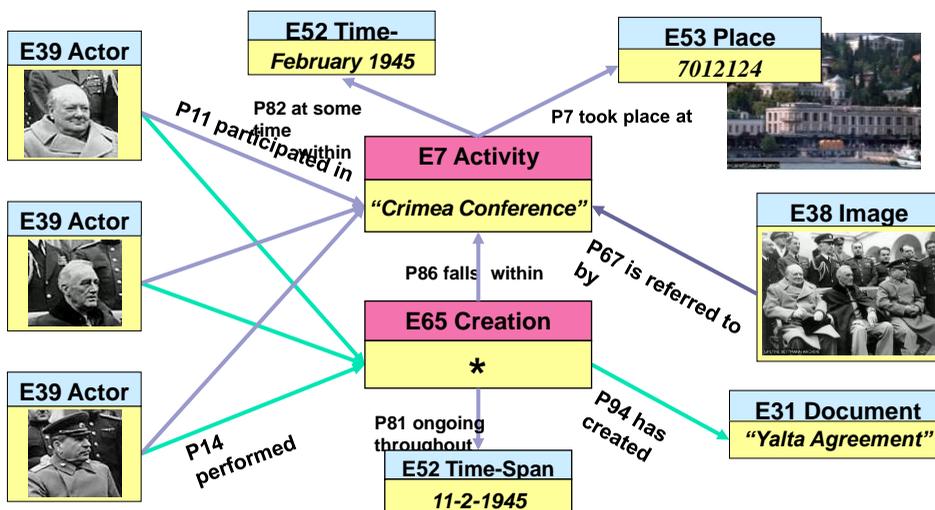
27 27

# Interpretation Modelling: Formal Models?

- Formal models for interpretations:
- Database modelling
  - CCH's "Factoid prosopography" approach
- Ontologies and Topic Maps
  - Examples related to the humanities:
    - [Dublin Core](#), a simple ontology for documents and publishing.
    - [WordNet](#) Lexical reference system.
    - [CIDOC CRM](#) (Conceptual Reference Model) - an ontology for "[cultural heritage](#) information".

28

## CIDOC-CRM



(From Martin Doerr, Stephen Stead "The CIDOC CRM, a Standard for the Integration of Cultural Information" (ICS-FORTH) Vienna 2002)

## Humanities research is “pre-ontological”, and the result is only “partly-ontological”?

- Even if the *results* of humanities research could be usefully modelled using these kind of formal methods ...
  - ... the effort of *doing* the research is “pre-ontological”, and progresses before the model has appeared.
- Even so, some aspects of humanities research shares some characteristics of formal modelling
  - Develops new concepts, naming of concepts, relating concepts to each other, grouping of objects of interest in these concepts
- However, I suspect that humanities research is only partly “ontological” and has to deal even when “finished”, with ambiguity and contradictory materials that makes fully formal modelling impractical
- What representation on the computer can cope with this kind of thing?

30

## What modelling strategy can be used to support Interpretation Development?

- Hierarchical
  - Simpler representation and less “fuzzy”
  - Like “point form” for an argument
  - A strategy I often use in preparing a presentation
  - Can lead to a classification/categorisation approach
- 2D spatial
  - There is a history of reference to using 2D paradigm to organise collections of notes on note-cards.
  - Supports “visualisation”
  - “nearness” as a (usefully) “fuzzy” relationship
- Pliny supports both somewhat – an area where references to notes can be layed out, plus the possibility to place references to notes inside other notes (containment).
- Pliny allows its user to start off with 2D modelling, and then move to a less spatial (more hierarchical?) modelling strategy as material begins to gel into an interpretation.

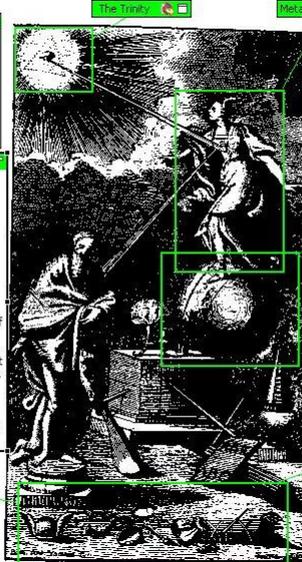
31

# Visualisation and 2D space

**Vico Frontispiece: Introduction**  
 GR and I used this image in our Paris Paper (approx. 1994). We were struck by Vico's use of graphical techniques to make philosophical points. Vico himself says that the frontispiece contains the essence of the arguments in his rather philosophical book.

**Vico Frontispiece: his introduction**  
 "Vico says in his introduction that the allegorical picture will both help the reader conceive of the idea of his work before reading it and more easily reduce it to memory after having read it. Note that although most of the intellectual material is represented via purely allegorical methods, one of the tools in the allegorical arsenal is space itself – the arrangement of the elements plays a role in defining the associations between them. Metaphysics is standing on a globe representing the world of nature. The various objects that represent the civil world are arranged in a line together at the bottom of the image. The arrangement in space is a part of the technique used here."

from Bradley, Rockwell (1994) "What Scientific Visualization Teaches us about Text Analysis"



**Natural World**

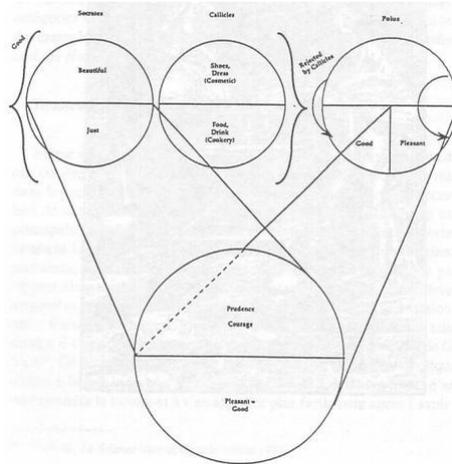
**Vico Frontispiece: 2D positioning**  
 The figures at the bottom of the image are placed at the "bottom" because of the symbolic significance of the bottom. Their appearance together also implies that they are in some important way, related.

Here "bottom" has a somewhat cartesian significance, but it is not (x,y) specific in the same way that, say, the sinweb placement is.

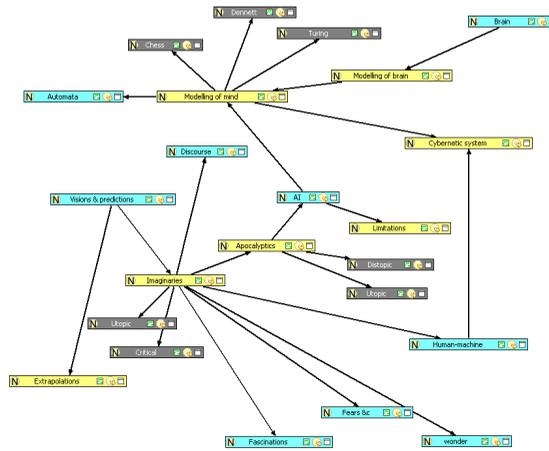
**Giambattista Vico's *New Science* (1725)**

# Visualisation and 2D space: Benardete 1991

- From Seth Benardete (1991). *The Rhetoric of Morality and Philosophy: Plato's Gorgias and Phaedrus*. University of Chicago Press



# Concept Map in Pliny



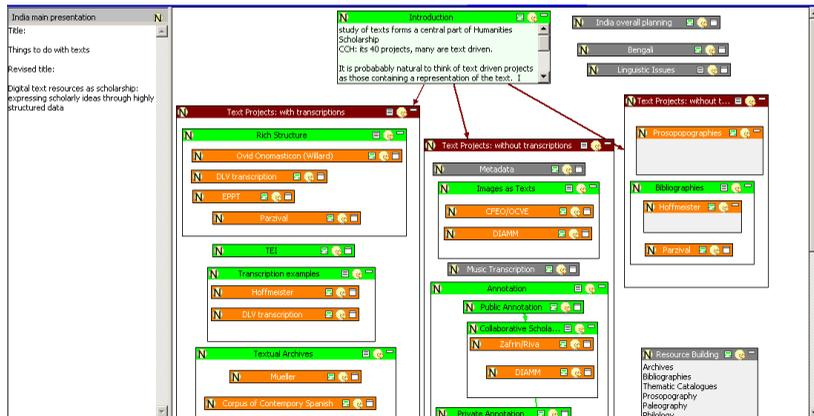
34

# Modelling an Interpretation: recontextualisation, layout, containment, naming

The screenshot shows a window titled 'uses of space for study' containing a document titled 'topological use of space'. The document has two main sections: 'topological use of space: Introduction' and 'Cartesian sense of space: examples'. The 'Introduction' section contains three notes: 'Bernardete's commentary', 'Vico Frontispiece', and 'topological use of space: a definition'. The 'Cartesian sense of space: examples' section contains 'A church floorplan', 'Simweb sample image', and 'Simweb dimension 2 outliers'. A sidebar on the left lists these items. A 'Visualization' button is visible at the bottom right of the document area.

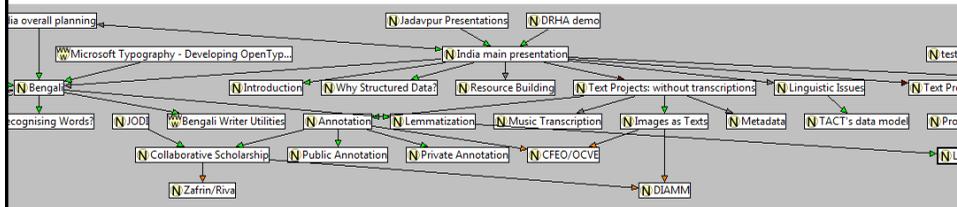
35

# Preparing a presentation with Pliny



36

# Pliny's "containment map"



- The connection between Pliny object forms one or more large connected graphs
- Can viewing the objects this way provide new insights to the user?
- Can Network Analysis techniques help?

37 37



## What is Pliny? (III)

- A way of thinking about software development for humanities tools that promotes interaction between tools
- ... and exposing a way of thinking about connecting DH software tools (say, a text mining environment) with personal scholarly interpretation.

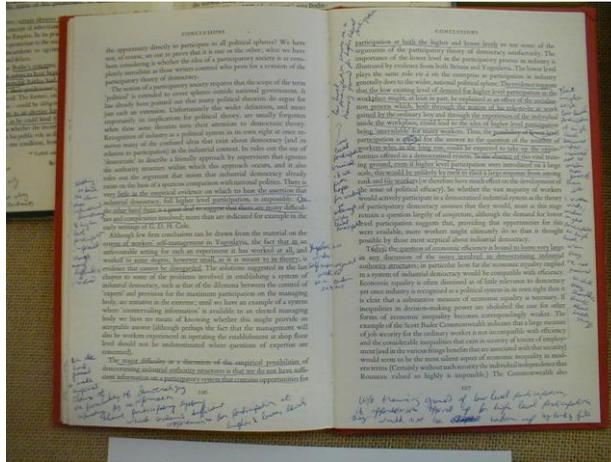
40 40

## Pliny's "second agenda"

- Exploring the special significance of annotation with regard to modularity
- Exploring the "eclipse plugin" paradigm for modularity, and its implications
  - Allowing independently written tools to coexist in various intimate ways ...
  - ... including sharing the screen.

41

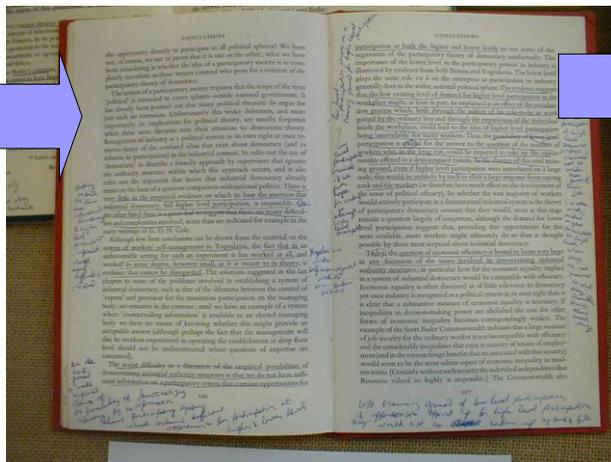
# Pliny and software tool collaboration: significance of annotation



From show about damaged books (!) at Cambridge University Library

## The page is at the “nexus”

- Publishing Application**
- Preparing text
  - book design and presentation
  - Printing
  - Distribution
  - The printing press



- Annotation Application**
- Support dynamic text
  - Support using of annotations
  - The pen

The page is the nexus between publishing and annotation

## The screen as the “nexus”

**PDF Viewer**

- Reading PDF file
- Layout on the screen
- Supporting page turning, etc

**Pliny**

- Support display of annotations
- Manage notes and anchors
- Support work with notes

FIGURE 1. This manuscript by Abraham Ortelius (1527–98), author of many geographical atlases and dictionaries, is not a draft of any of his published works but a collection of notes under alphabetical geographical headings. On the right side of each page notes are entered on slips of paper glued into the notebook in alphabetical order, following a common early modern method of alphabetization; the left side of the page is left blank for additional notes to add to the alphabetical entries. The notebook already resembles the kind of work for which it gathers material—the encyclopedic dictionary. Reproduction of an opening of Ortelius, “Thesaurus geographicus,” *Plinius-Museum* (Amstertp) MS 296, from Gilbert Journoy, “Abraham Ortelius et la poésie politique de Jacques van Baerle,” in Robert W. Karrow et al., *Abraham Ortelius (1527–1598), cartographe et humaniste* (Turnhout, 1998), pp. 163–64; reproduction by Harvard University Media Services.

or Islamic), suggesting their very broad applicability.<sup>4</sup> At the other extreme, note taking is of course very personal, dependent on the judgment and commitments peculiar to each individual note taker, which are not necessarily shared with others. Indeed, Michel Foucault reportedly expressed a desire to study copybooks of quotations because they seemed to him to be “*works-for-on-the-self—not-imposed-on-the-individual*”; they promised to give quasi-psychoanalytic insight into the thinking of the individual reader free to choose what was worthy of attention.<sup>5</sup> To the extent that reading

**Annotation 1:** depends on the judgment and interests of the note taker — not necessarily shared by others.

**Annotation 2:** Foucault wanted to study copybooks because they give psychoanalytic insight into the thinking of the reader.

4. For an introduction to the Chinese *Erhu*, see J.-P. Diény, “Les Encyclopédies chinoises,” in *Encyclopédisme. Actes du colloque de Caen, 12–16 janvier 1985*, ed. Annie Besq (Paris, 1991), pp. 197–200; on Islamic methods see Franz Rosenthal, *The Technique and Approach of Muslim Scholarship* (Rome, 1947).

5. Michel Foucault, “On the Genealogy of Ethics,” quoted in Stuart Sherman, *Telling Time: Clocks, Diaries, and English Diurnal Form, 1660–1795* (Chicago, 1996), p. 204 n. 22.

44

## Annotation and Modularity: Annotating Everything

- Scholars work with a great range of print (and now digital) materials
- If we want scholars to be digital tool users as well we must include digital tools among the set of resources they use
- They will need to be able to annotate in *the tools as well*.

# Annotating Everything: images

**Vico Frontispiece: Introduction**  
GR and I used this image in our Paris Paper (approx. 1994). We were struck by Vico's use of graphical techniques to make philosophical points. Vico himself says that the Frontispiece contains the essence of the arguments in his rather philosophical book.

**Vico Frontispiece: his introduction**  
"Vico says in his introduction that the allegorical picture will both help the reader conceive of the idea of his work before reading it and more easily reduce it to memory after having read it. Note that although most of the intellectual material is represented via purely allegorical methods, one of the tools in the allegorical arsenal is space itself – the arrangement of the elements plays a role in defining the associations between them. Metaphysics is standing on a globe representing the world of nature. The various objects that represent the civil world are arranged in a line together at the bottom of the image. The arrangement in space is a part of the technique used here."  
from Bradley, Rockwell (1994) "What Scientific Visualization Teaches us about Text Analysis"

**The Truth**

**Metaphysics**

**Natural World**

**Vico Frontispiece: 2D positioning**  
The figures at the bottom of the image are placed at the "bottom" because of the symbolic significance of the bottom. Their appearance together also implies that they are in some important way, related.  
Here "bottom" has a somewhat cartesian significance, but it is not (x,y) specific in the same way that, say, the simweb placement is.

**The Civil World**

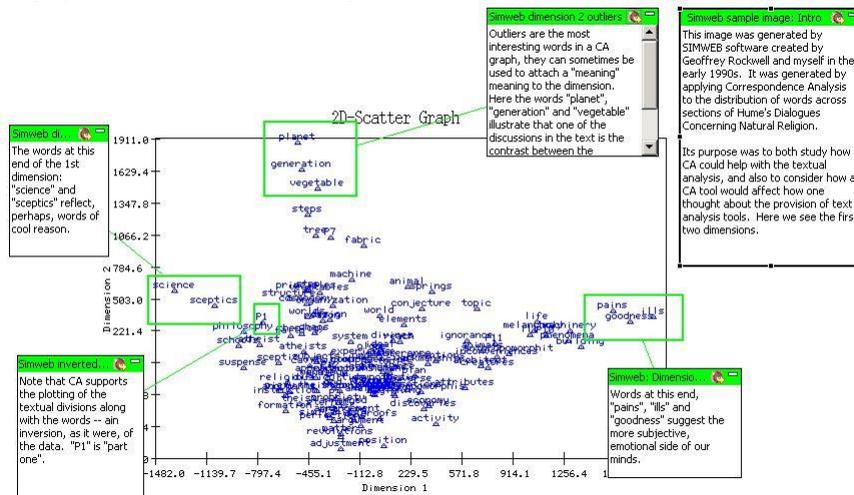
46

# Annotating other media

- Pliny could be extended to support annotation of video and audio resources as well.
- Pliny should be extended to support bibliographic data.

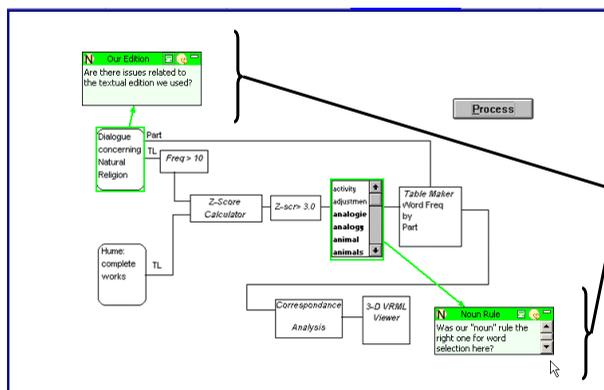
47

# Annotating Everything: application output



Software output from: Bradley and Rockwell (1997). *Simweb Correspondence Analysis Visualizer* 48  
URL: <http://tactweb.mcmaster.ca/cgi-dos/simweb/simweb.bat>

# Annotating everything: process descriptions



Comments added by researcher while building the flow diagram

# VLMA's standalone application

collection  
lightbox  
http://lkws1.rdg.ac.uk/ure/pixdir/2003.9  
http://lkws1.rdg.ac.uk/ure/pixdir/2004.98  
http://lkws1.rdg.ac.uk/ure/pixdir/2004.98  
http://lkws1.rdg.ac.uk/ure/pixdir/2004.98  
http://lkws1.rdg.ac.uk/ure/pixdir/2004.98  
http://lkws1.rdg.ac.uk/ure/pixdir/2004.98

search  
browser  
/141.14.237.38/ure/vlma/rdf/vlma.rdf  
serverlist  
search  
browser  
14.9.13  
14.9.72  
22.3.24  
22.3.5A-B  
23.11.3  
34.10.26  
45.9.2  
47.6.4  
50.5.6  
E.62.34  
E.63.1  
♦ http://141.14.237.38/cgi-bin/ure/uredb.cgi  
♦ http://141.14.237.38/cgi-bin/ure/uredb.cgi  
♦ http://141.14.237.38/cgi-bin/ure/uredb.cgi  
♦ http://141.14.237.38/cgi-bin/ure/uredb.cgi  
♦ http://141.14.237.38/cgi-bin/ure/uredb.cgi

img =

oThe *Virtual Lightbox for Museums and Archives (VLMA)* is a framework developed by University of Reading, the [Max Planck Institute for the History of Science](#) and [Oxford Archaeology](#) which gives a user access to an RDF server managing metadata about images, and the images themselves.

50

# VLMA as a plugin with Pliny Annotations

Resource Browser from the VLMA plugin

Object viewer from the VLMA plugin

Annotations from the Pliny plugin

Missing element: This element appears to be missing - perhaps worn off??

Missing element: Note the pattern of the decoration here.

# Pliny and VLMA

Reference to a VLMA object

The screenshot shows the VLMA application interface. On the left is a resource browser with a tree structure containing folders like 'Note', 'Web Browser', 'Image', 'PDF/ Acrobat', 'VLMA Image', and 'My Bookmarks'. The main area displays several document windows. One window, titled 'uses of space for study', is highlighted with a callout box and the text 'Reference to a VLMA object'. Other visible windows include 'Bernardete's commentary', 'topological use of space: introduction', 'topological use of space: definition', 'Cartesian sense of space', and 'Visualisation'. The 'Visualisation' window shows a small image of a bowl.

52

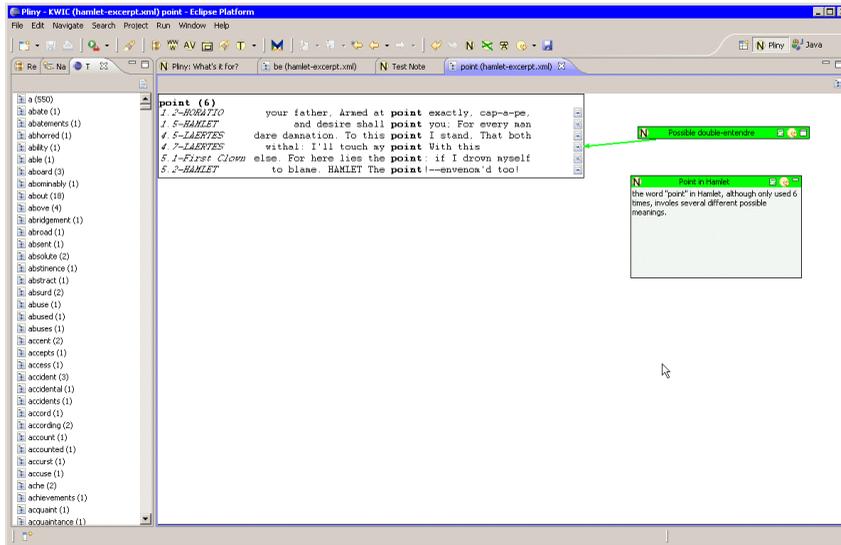
# GoogleMap Annotation Tool

The screenshot shows the GoogleMap Annotation Tool interface. The main window displays a satellite map of Sabratha, Libya. Several red location markers are placed on the map. A pop-up information box is visible, containing the text: 'Sabratha: a World Heritage site in Northern Libya. I am thankful for the help of my friend and colleague Hafed Walda at CCH.' Below the map, there is a 'Containment view' section showing a hierarchical tree structure of the site's components, including 'Sabratha', 'Puric Quarter, South of the Decumanus Max.', 'Thermae of Sesonius', 'Museum', 'Quarries', 'Christian Catacombs', 'Amphitheatre', 'Theatre', and 'Temple of Hercules'.

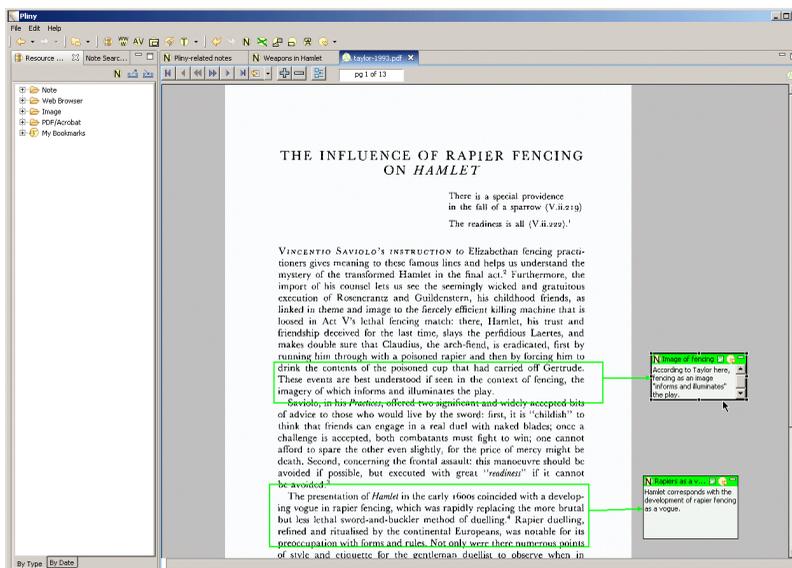
Sabratha: a World Heritage site in Northern Libya).  
I am thankful for the help of my friend and colleague Hafed Walda at CCH.

53

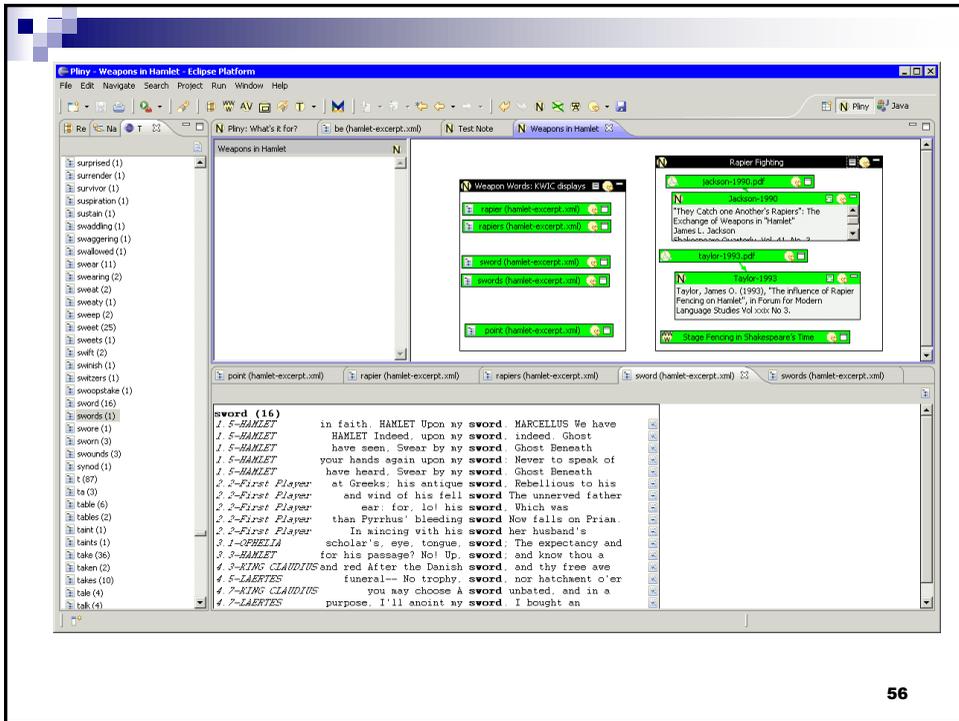
# KWIC Concordance Tool



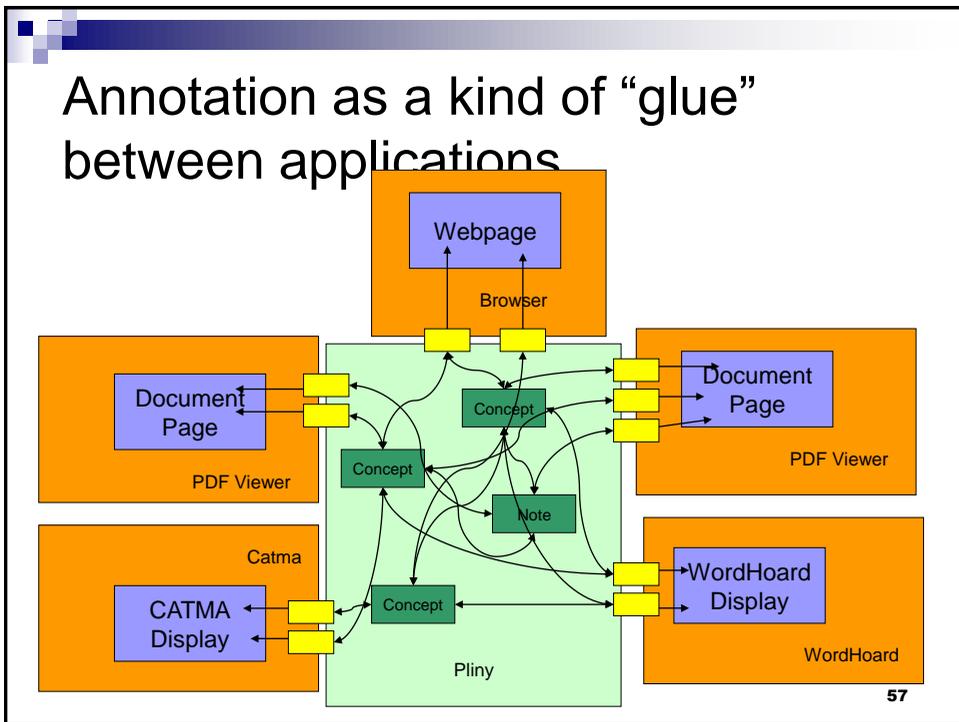
54



55



56



57

## Contribution model

- It is (relatively) easy to add new components (as plugins) into Pliny/Eclipse, and allow them to communicate with each other. This has led to the language used in Eclipse of a plugin object “making a contribution” to the operation of another plugin.
- Examples for Pliny
  - contributing support for new data formats to Pliny:
    - An plugin could be developed for video or audio that stored its annotations in a Pliny format to allow them to appear on other Pliny screens.
    - A plugin could be developed to support Pliny-like annotation of XML/TEI documents directly.
    - A plugin could be developed to store bibliographic materials that integrated with Pliny
  - Pliny can contribute annotation support to other plugins (such as the VLMA example)

58

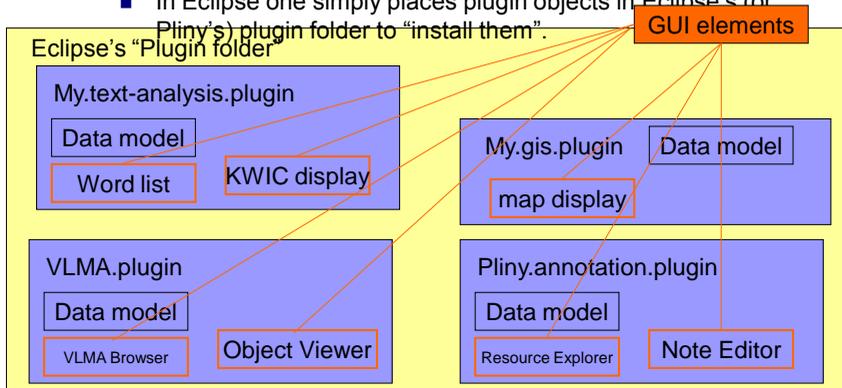
## Tool Modularity: Pliny and Eclipse

- Pliny takes a modular approach to tool component design based on the Eclipse (<http://www.eclipse.org>) model.
- Eclipse (and Pliny) supports modularity in ways other than just file-sharing and/or pipe-lining (although, of course, it provides for these too).
- Much of Eclipse is designed to allow for a sense of integration at the GUI level – on the screen – between separately built components.

59

# Plugins

- In Eclipse a plugin provides a package framework for a single tool.
- Plugins can contain **GUI elements** (called *views* or *editors* by Eclipse) that can display in panes on the screen.
- In Eclipse one simply places plugin objects in Eclipse's (or Pliny's) plugin folder to "install them".



## Other roles for Plugins

- Plugins represent points where software can be written independently and can be developed out of the expertise of others
- So far, all the plugins have been focused on supporting new resource types, but plugins for other purposes are also possible, e.g.:
  - Network analysis of the Pliny database
  - Exporter of a note collection into a usefully ordered textual document

## What is Pliny? (IV)

- Pliny, the software, is a Prototype.
  - .. Used as a way to explore issues related to computing and scholarship.
    - It has an element of “practice-led” research about it.
- By developing Pliny and making it available for others to use I was hoping to promote some thinking and discussion about the things that Pliny tries to deal with.
- To have any hope of achieving this, it was necessary to make Pliny available (unlike prototype software developed within computer science research).
  - ... Perhaps in the same kind of way that, by producing an art-work from “practice-led” research, issues embedded in the object are meant to promote related thinking by others.

62 62

## “Practice-led” research

“The Research Grants – practice-led and applied route provides funding for research where:

- practice is an integral component
- it is specifically undertaken with a view to generating outputs and outcomes with a defined application beyond the education sector; and/or
- It theorises contemporary practice in order to inform the Principal Investigator’s own individual practice.”

■ *AHRC Research Funding Guide, Version 1.8, December 2009, p. 16*

■ The AHRC Practice-lead research model has been developed to fund artistic expression that is also research-oriented

■ Can it be extended to something like Pliny?

63 63

## Pliny as free software

- Can Pliny, the software, simultaneously be a free piece of software for people like you and me to use?
- Where is the infrastructure to support Pliny in this way to come from?

64 64

## What kind of software is Pliny?

- Is it:
  - a tool in the open source paradigm, or
  - software like that produced in Computer Science: to explore ideas by me, the researcher?
- Clearly, by now, one can see that it is a bit of both. Can this be achieved?

65 65

## Community Acceptance: “But *Pliny* is not browser based!!”

- Will a user community take it up?
- well... scholars have learned to operate the word processor when it proved to be useful to them, and they now use both email and the browser itself.
- In each case there were originally complaints that these tools were not “natural” – not “user friendly”
- Pliny is built on top of the Eclipse plugin framework
- The Eclipse plugin model allows new tools to be easily added that share elements of interface design – making them at least somewhat easier to adopt.

66

## Implications of Software Development in the DH

- The benefits of integration for modular and independent toolkit development are available within the Eclipse framework, and I believe are obvious.
- The benefits come at a cost, however:
  - Eclipse creates applications, not web sites. Tools such HTML, CSS, XML and XSLT provide only peripheral assistance to application development.
  - The Eclipse framework operates within Java, but is not built on the more familiar Sun-Java AWT/Swing/Applets platforms, and will therefore need to be learned by most Java programmers.
  - Development of tools in this way requires a highly professional attitude to software development, that might go beyond the resources available to many in the humanities.

67

## Is Pliny failing?

- Pliny is too difficult and too foreign (!) for beginners
- Better interface design needed for Pliny?
- Pliny needs to support collaborative research.
- The Englebartian nature of Pliny means that it disappears.
- Pliny needs a marketing plan?

68 68

## Try it yourself.

- Pliny software is available from:  
<http://pliny.cch.kcl.ac.uk>
- For developers:
  - the Pliny API and some developer documentation is published as well.
  - Source code for Pliny is available from SourceForge
- Let me know what you think:  
[john.bradley@kcl.ac.uk](mailto:john.bradley@kcl.ac.uk)

69