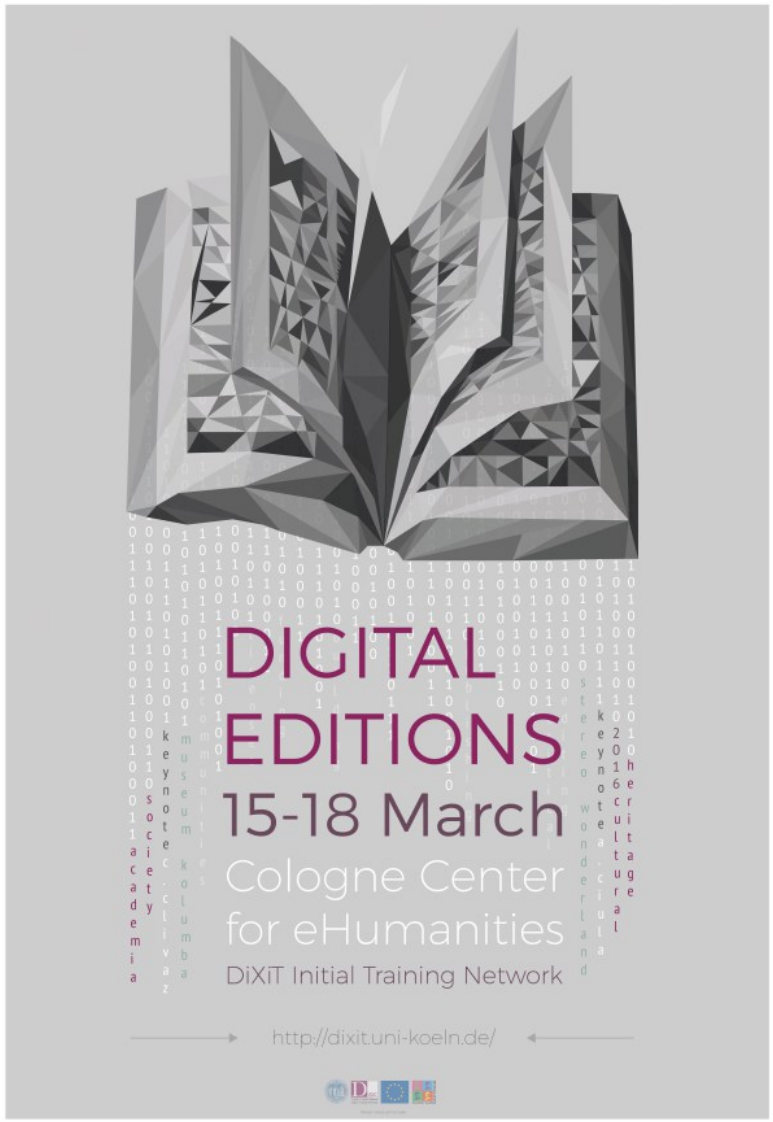


Modelling Textuality
A Material Culture Framework

Dr Arianna Ciula
Department of Humanities
University of Roehampton

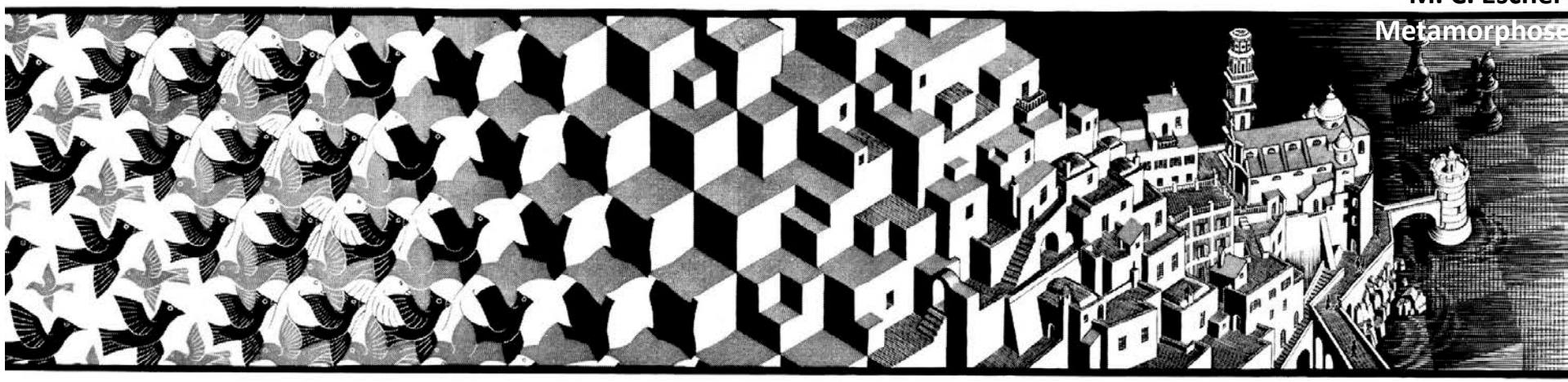
@ariciula

DiXiT Initial Training Network, Convention 2 - *Academia, Cultural Heritage, Society*
18 March 2016
Cologne Center for eHumanities - University of Cologne

Outline

Irma Gruenholz

- Concepts
  - (Digital Humanities)
  - (Modelling)
  - Material Culture
  - Textuality
  - → Modelling textuality
  - Societal resonance
- Material culture approach to modelling textuality
  1. Material sources → ex digital palaeography
  2. Material 'publications' → ex hybrid publications for historical research
  3. Socio-cultural agencies → ex historical data, assertions and interpretations
     - What do DiXiT Fellows think and do?
- Conclusions


M. C. Escher
Metamorphose

Digital Humanities

- Scope

  “digital humanities explores how the questions posed in humanities scholarship are transformed and extended by the digital – both by means of tools and epistemologies” (Ray Murray)

- Digital + Humanities
- Core research methodology →Modelling

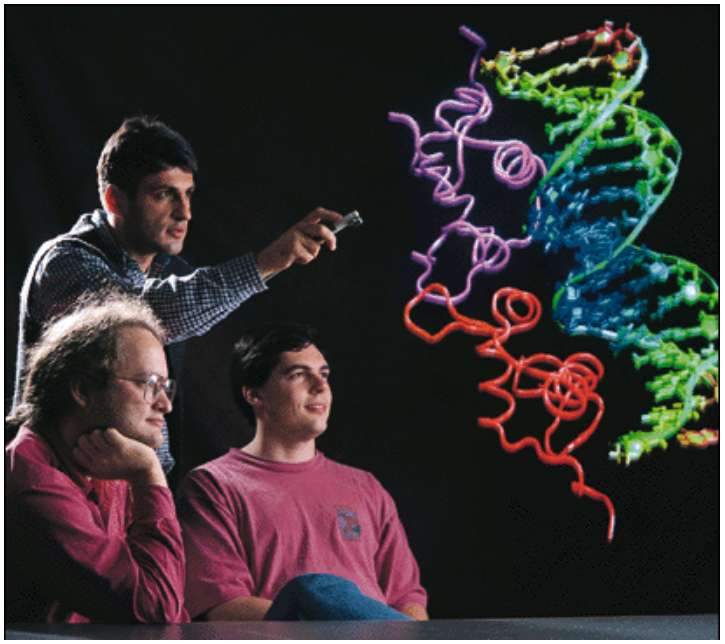
What is modelling?

Ciula and Eide 2015

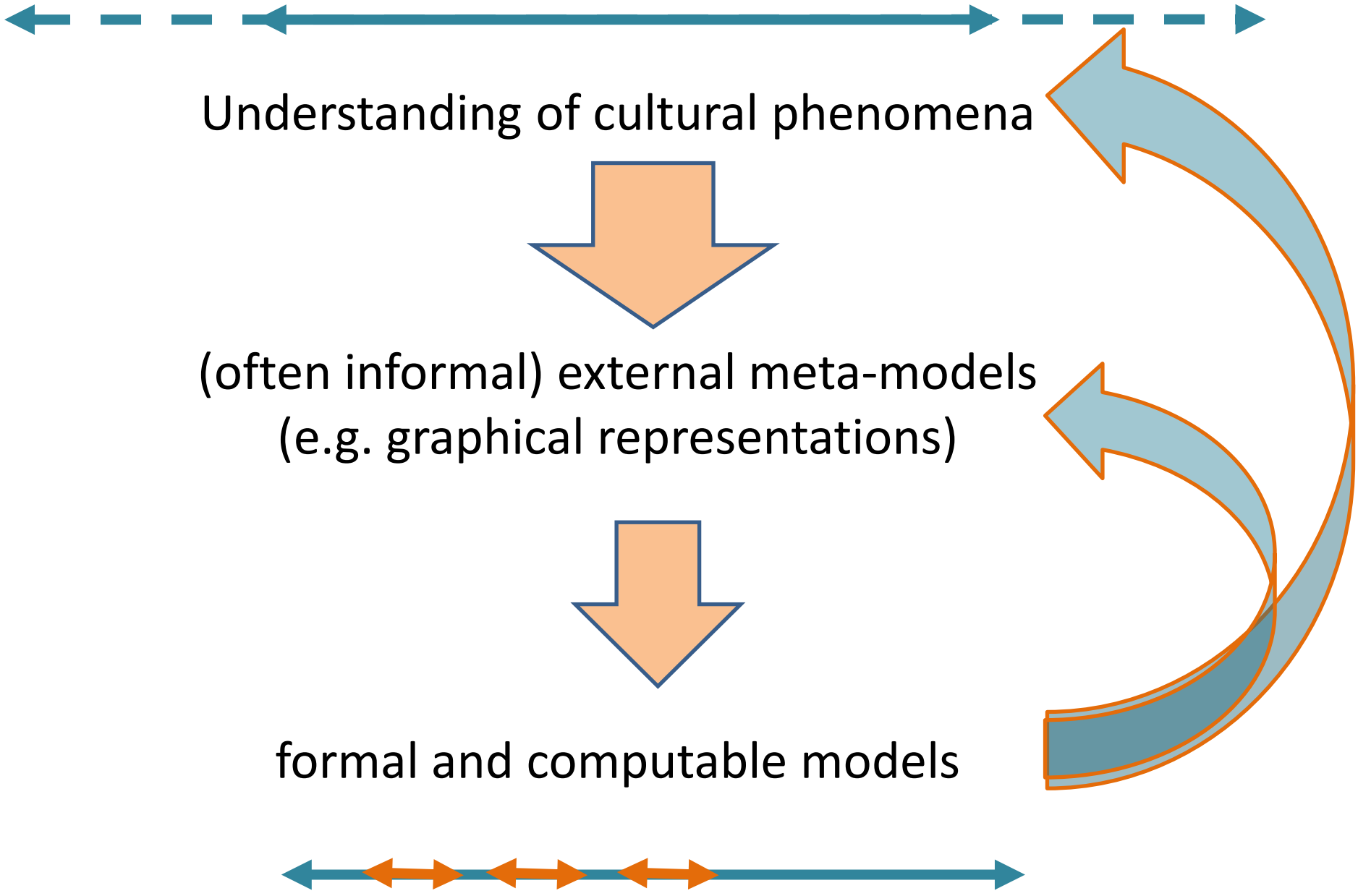
- Creative process of thinking/reasoning
  - meaning made and negotiated through creation and manipulation of external representations

http://spectrum.ieee.org

http://www.howwemontessori.com



- As research strategy
  - process by which researchers make and manipulate external representations ("imaginary concreta", Godfrey-Smith 2009) to make sense of objects and phenomena


Understanding of cultural phenomena
(often informal) external meta-models
(e.g. graphical representations)
formal and computable models

Material Culture

- Oxymoron
- From anthropology and ethnography
  - "culture is ordinary" (Williams 2001/1985)
  - Artifacts are intentional, cultural releasers, "animated" (Graves-Brown 2000)

14th cent. hose and hood shop (Boucher 1987)

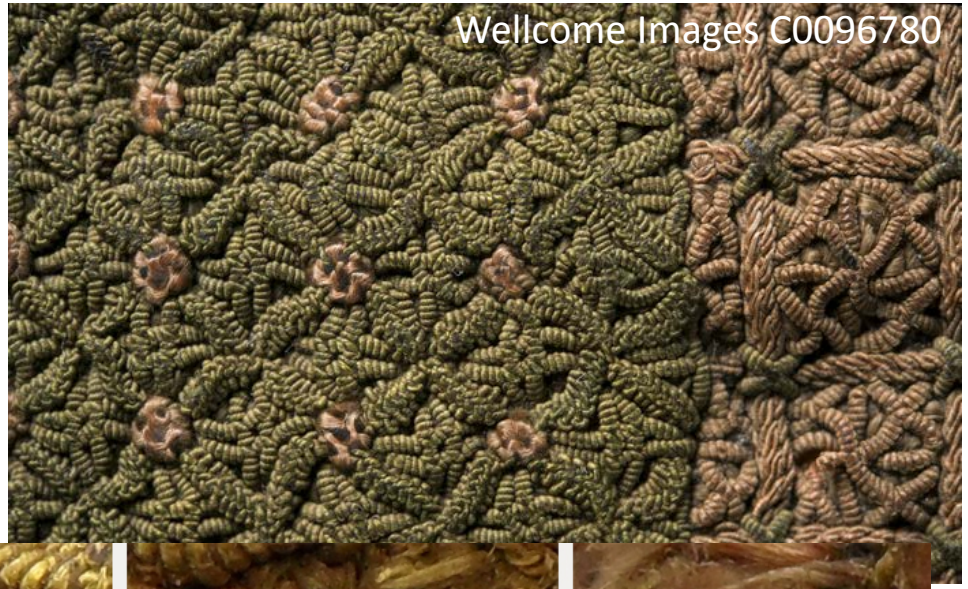
- A way of doing history → answering the question of how people have been / are by looking at what they have made
  - Object-based, it unpacks objects
  - Writing object's biography, story shaped by human use - Thick description (Geertz 1973; 1993)
  - What ways of thinking and living do these artifacts reveal? What is their total meaning?
  - Unattainable, but there are clues

Non-digital example

Embroidered binding (cover) of Wellcome MS. 8932

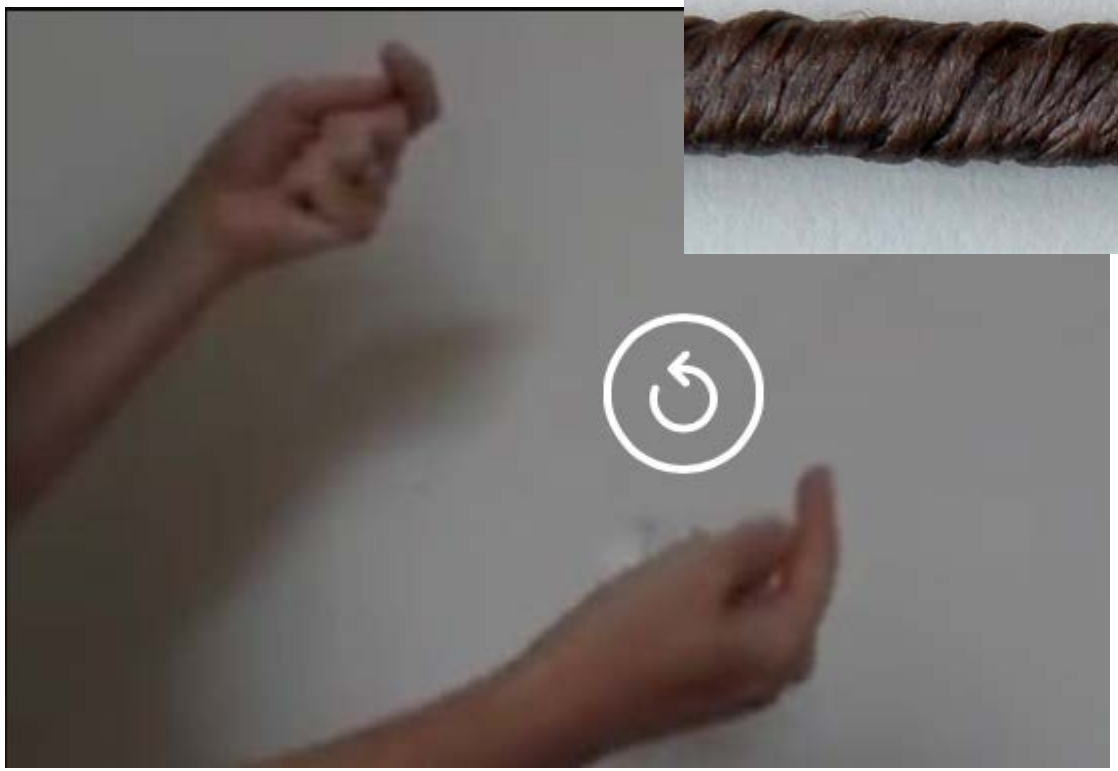
- Jacqui Carey (Wellcome Trust Researh Bursary holder, textile craftsperson)
- Understand the what, why and how of past practice

Wellcome Images L0021219



Non-digital example

Embroidered binding (cover) of Wellcome MS. 8932



Watch video of how it's made

The Digital as Material Object

- *Internet machine* by Timo Arnall

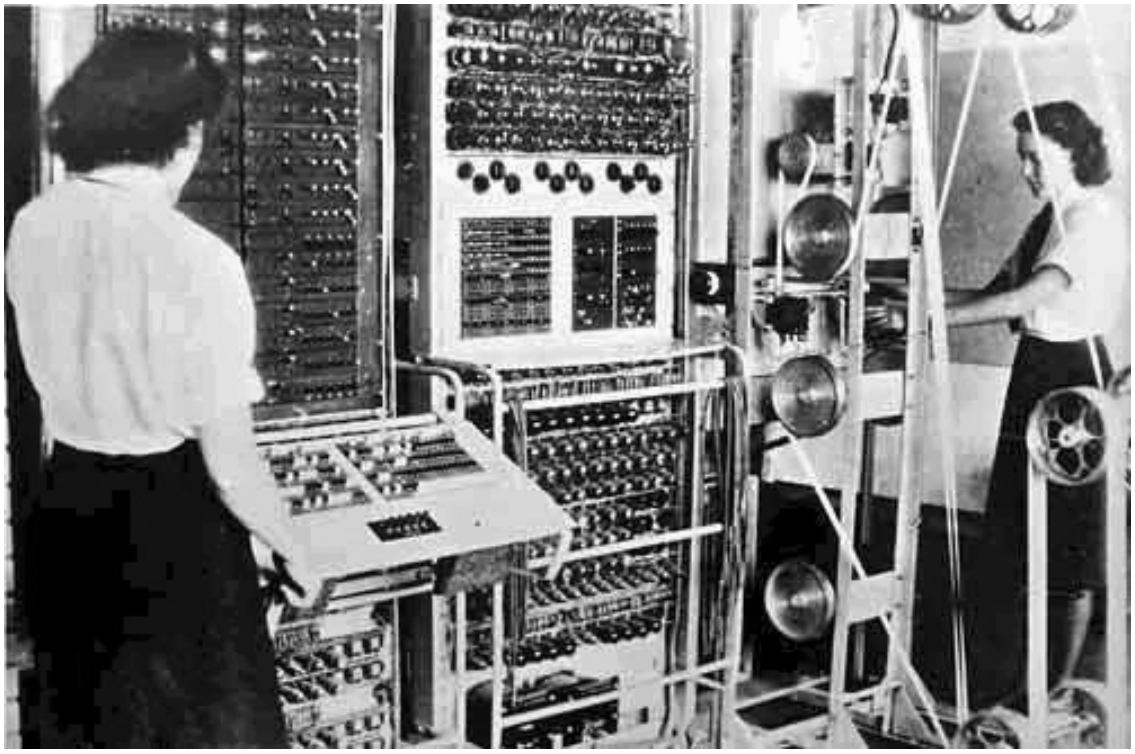
  Big Bang Data, Somerset House, London 2015016 - watch trailer

Image reproduced by permission of Timo Arnall

The Digital as Material Object

- Conversation between Laura Brake (Emerita Professor, Birkbeck) and Jim Mussell (Associate Professor, University of Leeds) – 29.51’

Societal resonance



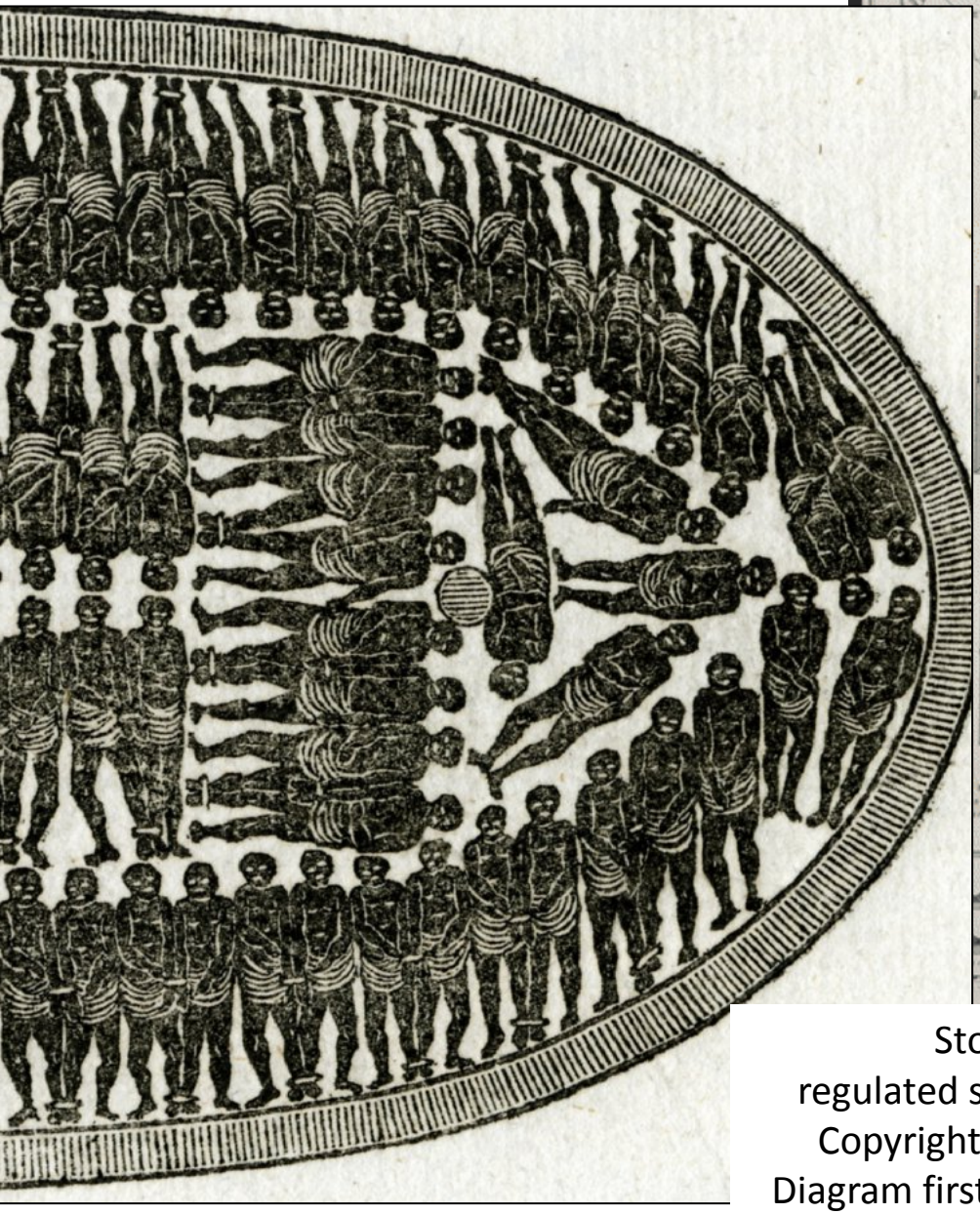
A Colossus Mark 2 computer being operated by Dorothy Du Boisson (left) and Elsie Booker, 1943.
© Crown copyright image reproduced by permission of The National Archives - Catalogue reference FO 850/234

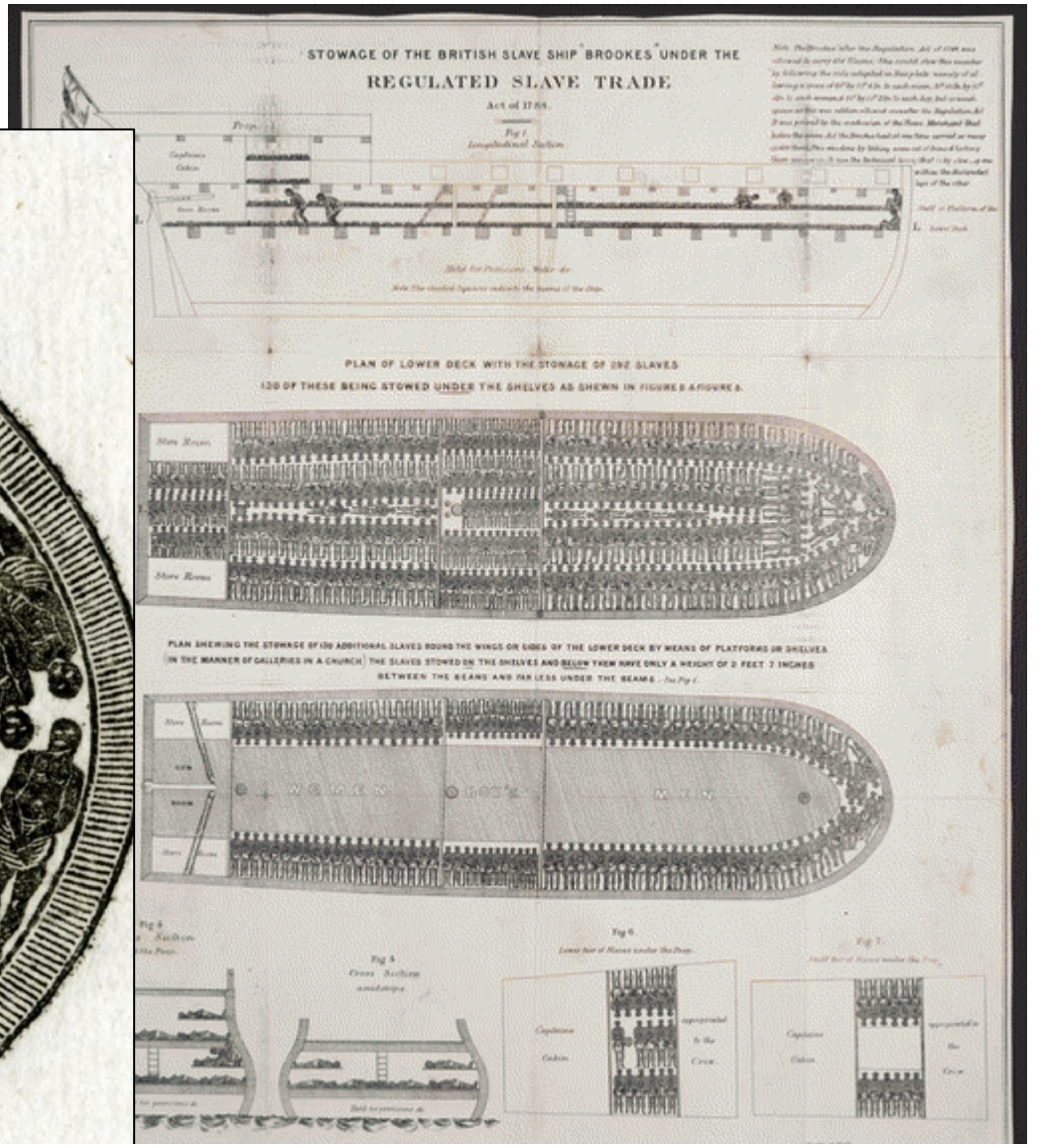
- Public history

"public history in all its senses stands for the ways in which the past is mediated and for the continual need to reflect critically on those ways." (Jordanova 2015)

My daughter playing with an iPad computer, 2012

Societal resonance





Stowage of the British slave ship "Brookes" under the regulated slave trade act of 1788. [n. p. n. d.]. Liverpool, 1884 Copyright Library of Congress https://lccn.loc.gov/98504459 Diagram first published by William Elford in 1788 and exhibited at Big Bang Data, Somerset House, London 2015-2016.

Societal resonance

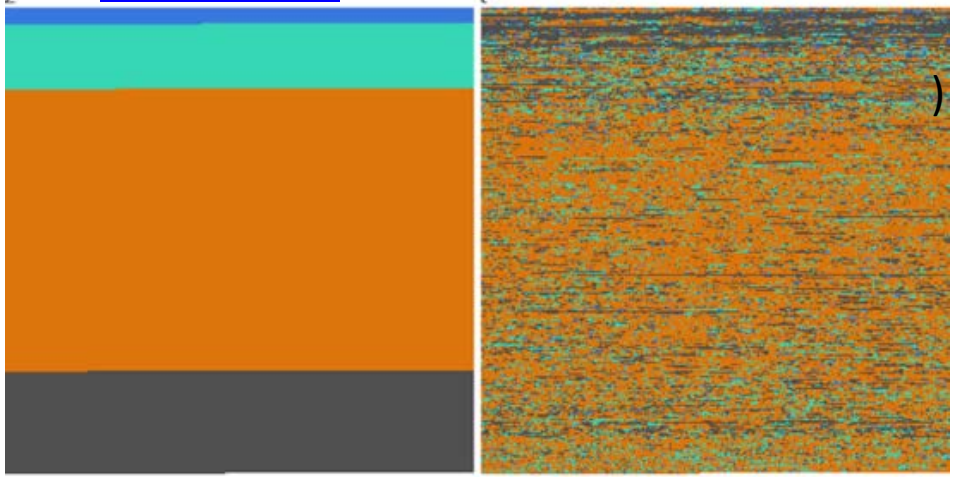
- Cultural literacy
  - Ubiquity of digital models
  - Unpack and create digital & data models

Ciula, Eide, Marras, Sahle
2016-2017
Modelling between digital and humanities: thinking in practice
Volkswagen Stiftung

World Processor
Big Bang Data, Somerset House, London 2015016

Image reproduced by permission of Ingo Günther
© 1988-2014 Ingo Günther

Pixellating the War Casualties in Iraq
Big Bang Data, Somerset House, London 2015-16



CC BY 2.0
2010 Kamel Makhloufi

Modelling Textuality

- Textuality
  - → theory of texts

  Dynamic (social) condition of texts as open objects
  - → beyond texts in narrow sense

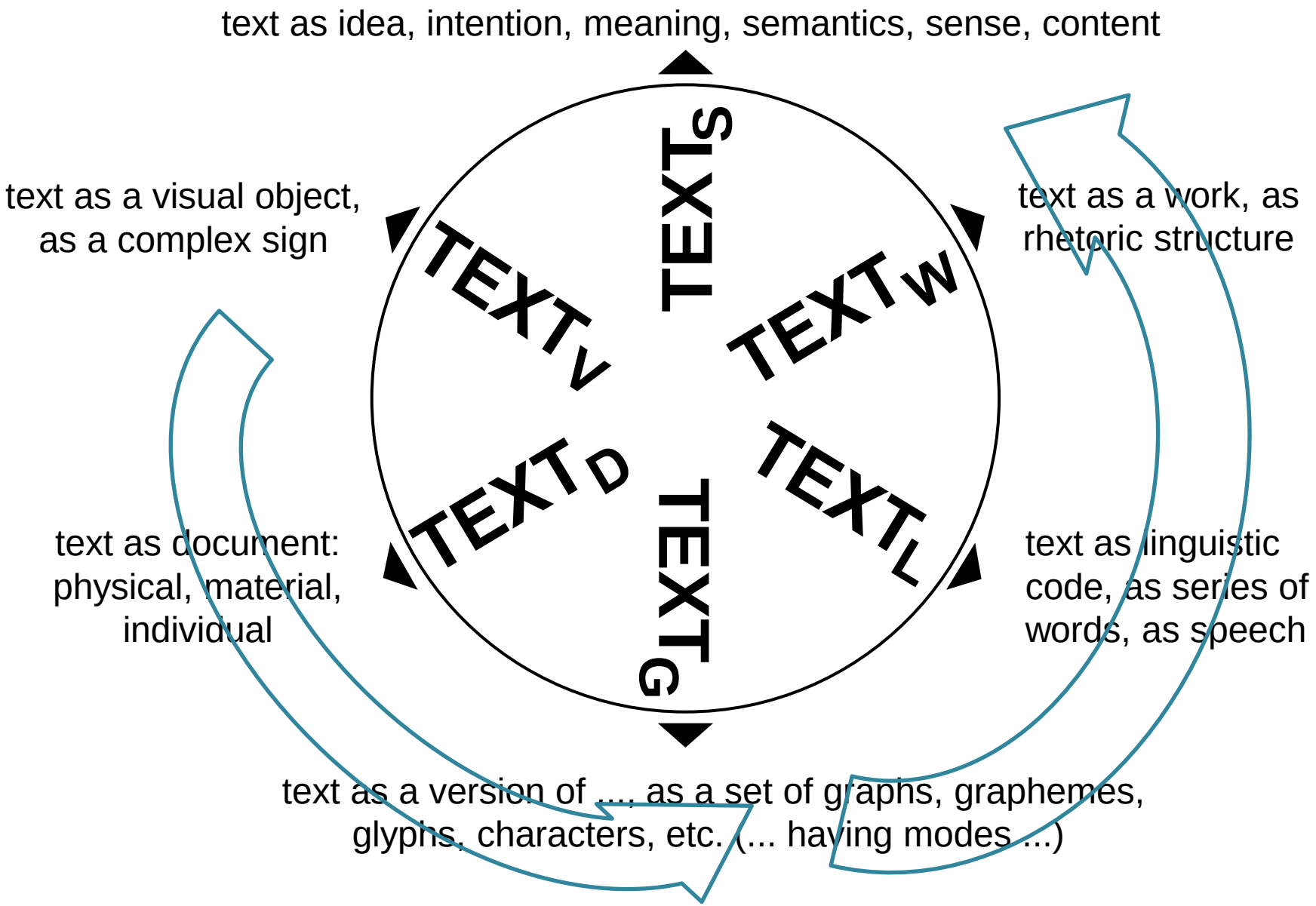
  Readability of cultural phenomena (cultural literacy)

  www.cleurope.eu

- Model of modelling to grasp relational aspects
  - Meaning-making

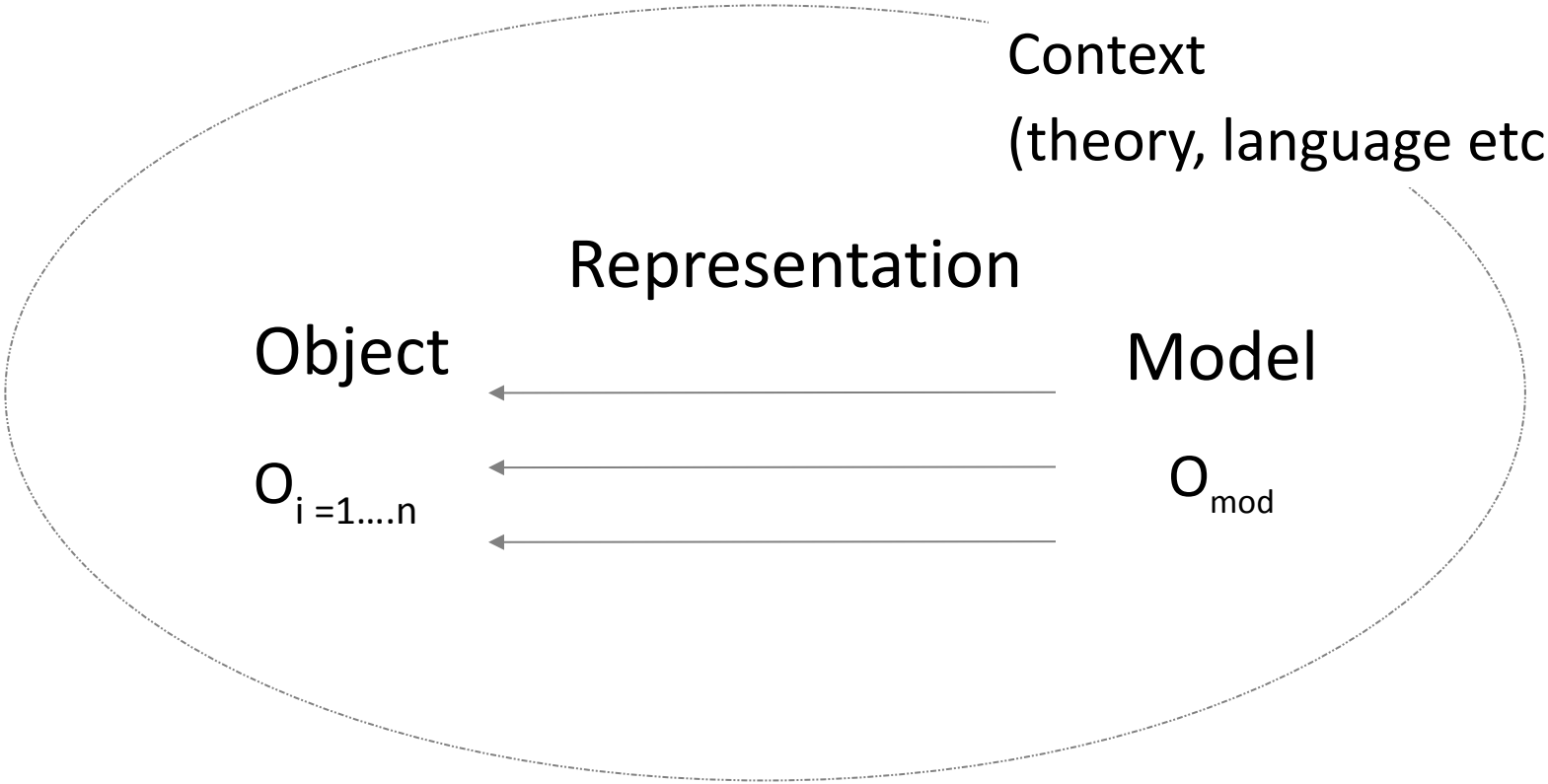
Pluralistic model of text

Sahle (2012) - arrows added by me



Ciula and Eide 2014

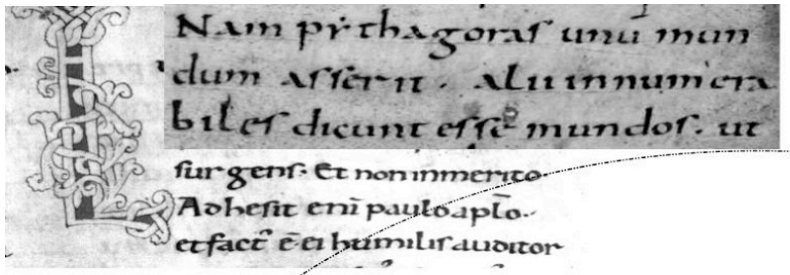
Dynamic relation models/objects/interpretations



Based on Kralemann and Lattmann 2013

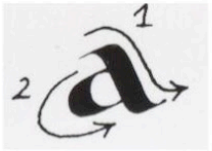
(1) Material primary sources

Ciula 2005; Ciula and Eide 2015



Context

(palaeographic method, terminology, type of handwriting segmentation algorithm, etc.)



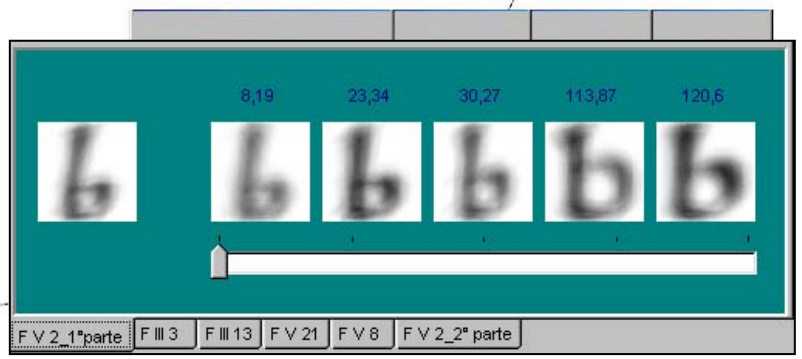
Objects

Model

Representation

Model attributes =
shaft orientation, ductus, thickness ...

O_{mod} = tangent 0

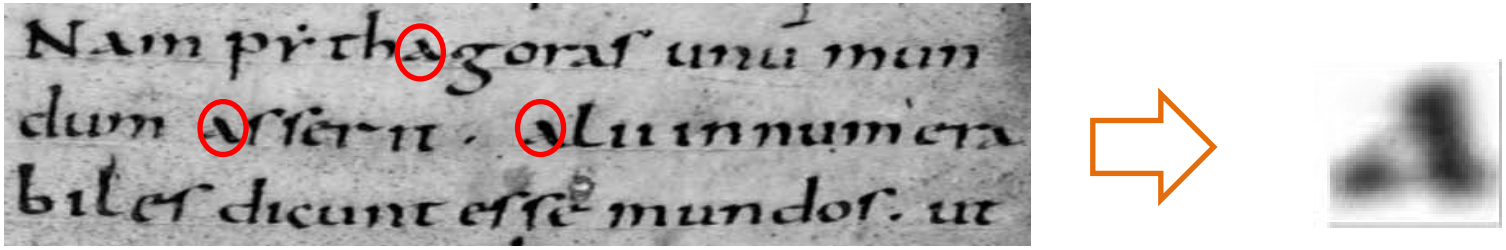


(1) Material of primary sources

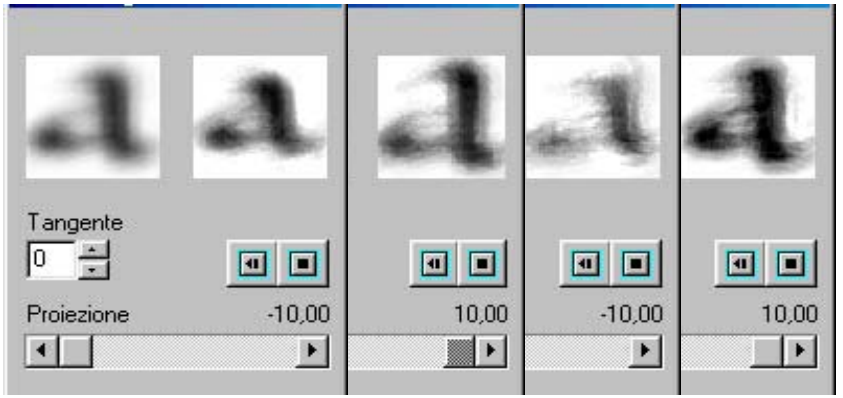
Image-like model

Ciula and Eide 2015

- Spatial similarity: 2d spatial object → 2d spatial model



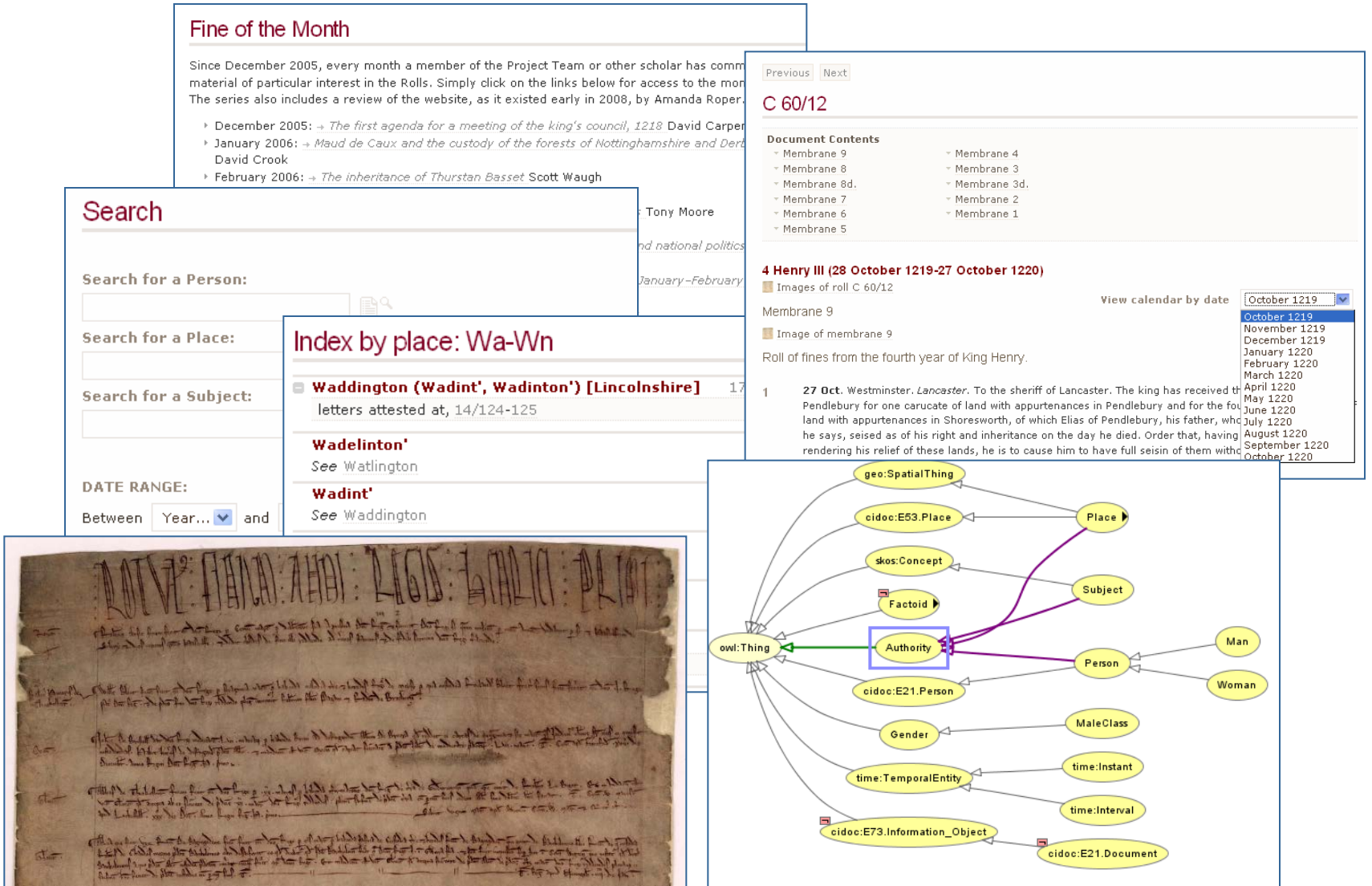
- Different temporality: single instances in the manuscript → morphing model which incorporates variants



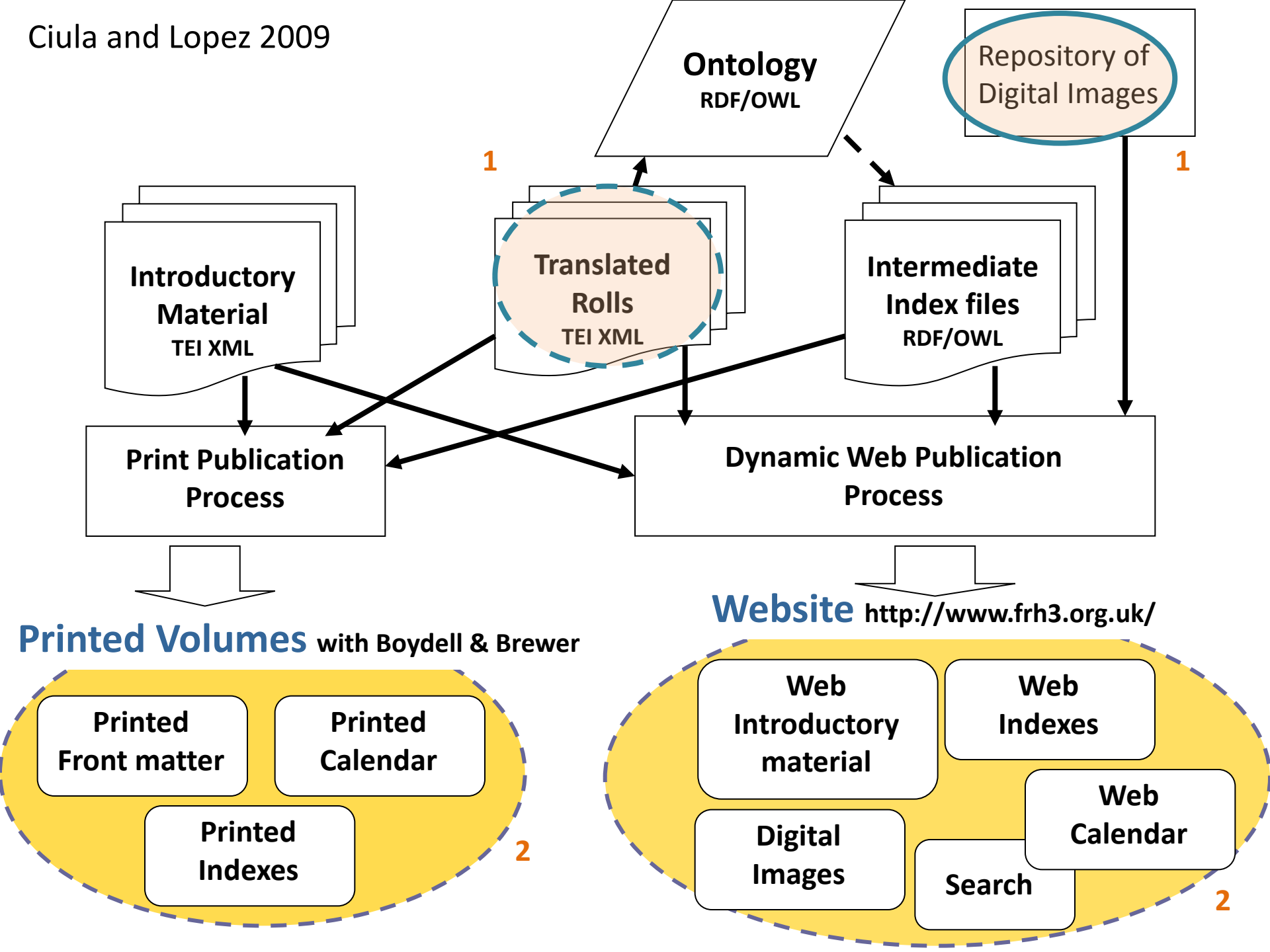
(2) Materiality of a hybrid publication

Ciula and Lopez 2009

Thematic Research Collections



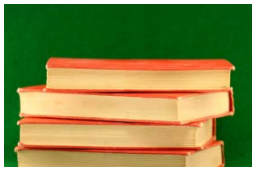
Ciula and Lopez 2009



(2) Materiality of a hybrid publication

Ciula and Lopez 2009

Calendars as Access Resources



as Thematic Collections

10 HENRY III (1225–1226)

66 *For the constable of Chester.* Order to the barons of the Exchequer[1] to permit John, constable of Chester, to have respite, until the octaves of the Close of Easter in the tenth year, from the debts he owes the king in the counties of Yorkshire and Lancaster and which are exacted from him by summons of the Exchequer, which term the king has granted him.

1. Corrected from 'the sheriff of Lancaster'.

67 17 Jan. Marlborough. *Concerning respite of a demand.* Order to the barons of the Exchequer to place in respite, until the octaves of the Close of Easter in the tenth year, the demand they make by summons of the Exch… Muscegros for as much as pertains to him of the debt of Wi… then keeps to his terms of a fine he made with the king for hi… bishops of Bath and Salisbury the justiciar.

68 *Concerning enrolling the sheriff of Cumberland.* Orde… Exchequer to admit Robert son of William, whom W. bishop … to them, and to cause the sheriff of Cumberland to be enrol… same bishop to answer for that bailiwick at the Exchequer.

69 *For the earl of Gloucester.* Order to the barons of the … respite, until the octaves of the Close of Easter in the tenth ye… they make by summons of the Exchequer from G. earl of G… he owes to the king.

70 18 Jan. Marlborough. *For John Draper of Windsor.* … Buckinghamshire that if John Draper of Windsor, who pu… executors of the testament of Robert de Ferrers, formerly … Cippenham for £52, as they say, will give him surety by trustw… men that he will answer the king for the aforesaid £52 at … payment of the debt that Robert owes the king, or the execu… it shall be thus provided, then he is to permit them to sell tha… him to dispose of it by his will.

71 21 Jan. Marlborough. *For Alexander Bastard.* Order t… to place in respite, until upon the next account of the sherif… demand for one mark[1] that he makes at the Exchequer by … Exchequer from Alexander Bastard, which he says he had ren… at the time that he was sheriff of Dorset, and of which he co… acquitted him at the Exchequer, having accepted security fro… that he will be there then upon the account of the sheriff to sa…

1. 'one mark' interlined.

72 *Concerning land to be taken into the king's hand.* Order … to take into the king's hand the land formerly of Henry of … which he held of the king in chief, and to keep it safely until the…

69

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Between Year... and Year...

RESULTS DISPLAY:

Results per page: 20

SUBMIT SEA…

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Wadinton'
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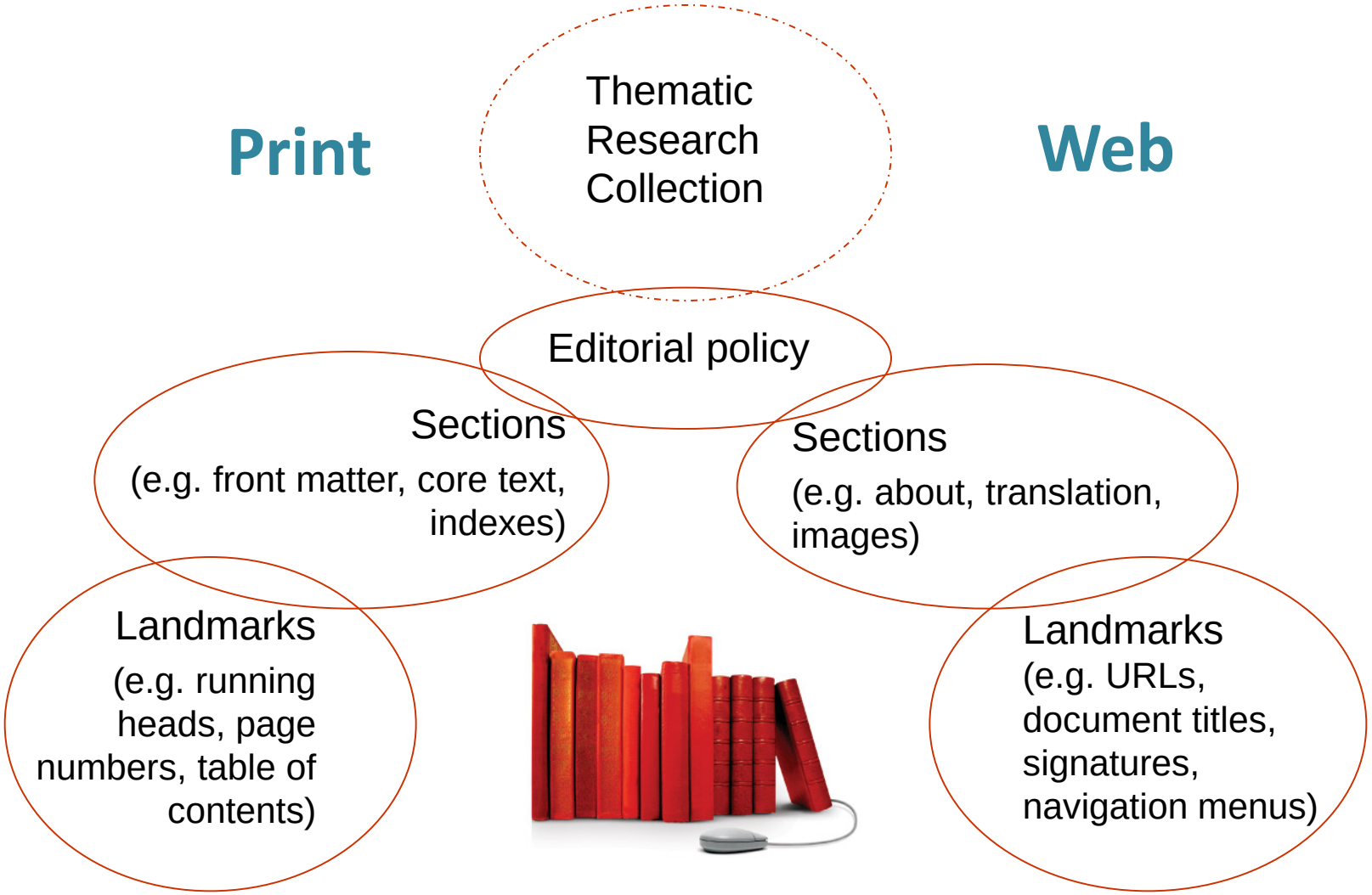
(2) Materiality of a hybrid publication

Ciula and Lopez 2009

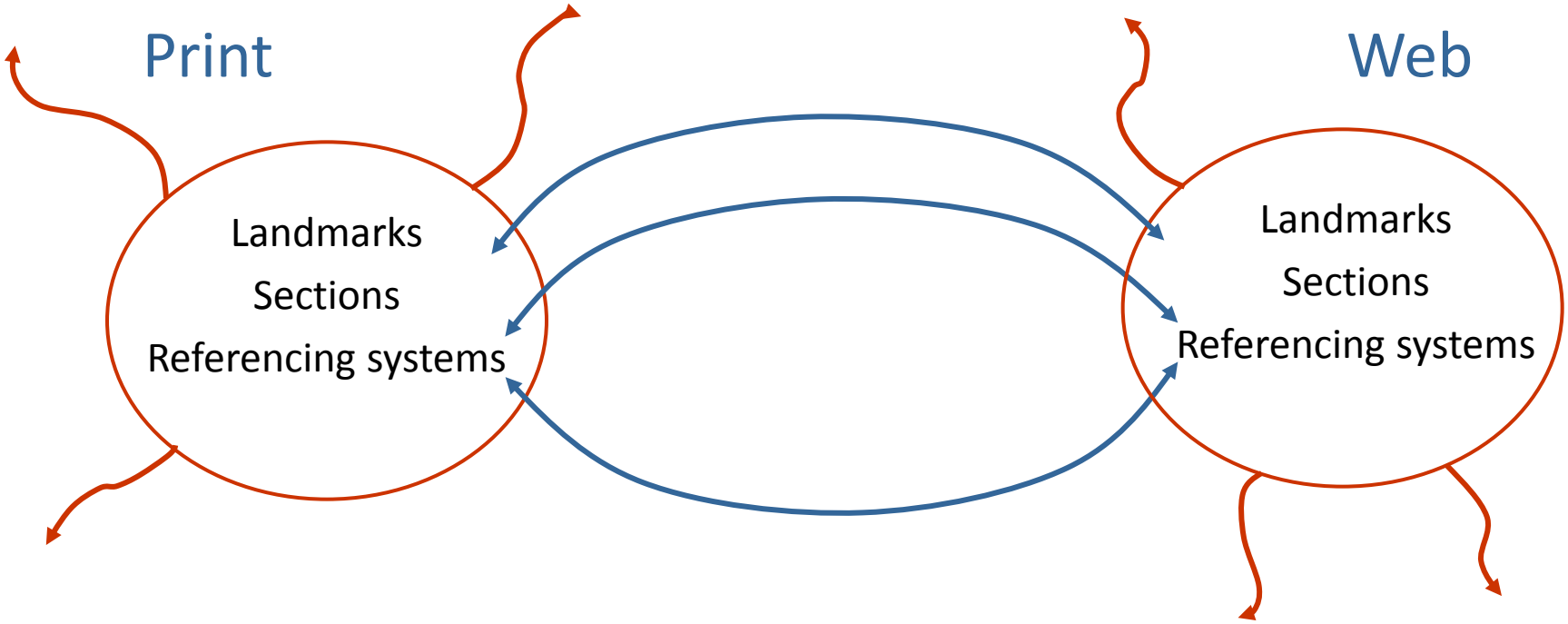


(2) Materiality of a hybrid publication

Ciula and Lopez 2009

Connective Structures

- Used to document relationships within research literature
  link related information, forming intellectual relationships between concepts within an access resource (Palmer 2005)



Web

Previous Next

C 60/8

Document Contents
- Membrane 2
- Membrane 1
- Membrane 1d

1 HENRY III (28 October 1216–27 Octobe

Images of roll C 60/8

Membrane 2

Image of membrane 2

Roll of fines of the first year of King Henry.

1 [**No date**]. Kent. Robert Arsic has made
prison, and he is to serve the king with t
himself, Hasculph de Soligny, and two of
fine at the set terms and for performing

3 **17 Dec.** Fairford. *Oxfordshire*. John of Bristol gives the king the moiety of 56 m. for having a writ to distrain the abbot of Bruern to render to him the charters for 56 m., which Jordan Clerk, his brother, committed to him to keep. [1] He has letters to distrain the abbot, and the sheriff of Oxfordshire is ordered to take security from John for the moiety of the aforesaid 56 m. [2] Witness the earl.

1. It is possible that the following clause was added later, as the ink is very slightly darker. It is not, however, clearly demarcated from the remainder of the entry as in the other examples on this membrane.
2. An erasure has been made shortly below the body of the entry.

1. The payment to the Marshal is clearly separated from the entry by a horizontal line.

Print

3 17 Dec. Fairford. *Oxfordshire*. John of Bristol gives the king the moiety of 56 m. for having a writ to distrain the abbot of Bruern to render to him the charters for 56 m., which Jordan Clerk, his brother, committed to him to keep.[1] He has letters to distrain the abbot, and the sheriff of Oxfordshire is ordered to take security from John for the moiety of the aforesaid 56 m.[2] Witness the earl.

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2. An erasure has been made shortly below the body of the entry.

king's father. He found Robert son of Payn and Ralph of Broughton as pledges for

g the moiety of 56
him the charters for
eep.[1] He has letters
take security from

e. It is not, however, clearly

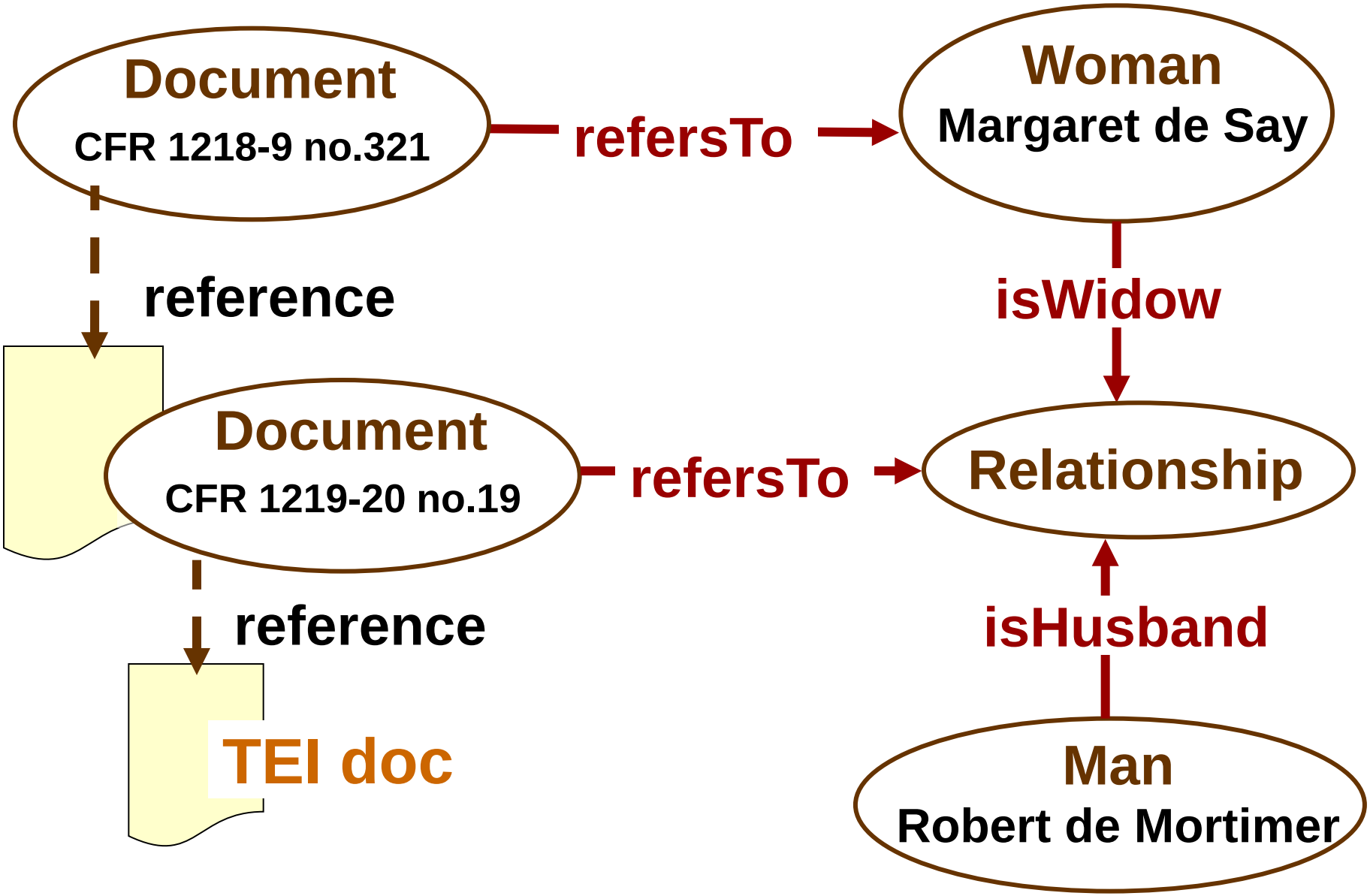
has made fine with
herington, which he
ershire that, having
o the king, he is to
h its appurtenances
nd is quit.[1] Witness

(3) Historical data, assertions, interpretations

Henry III Fine Rolls ‘data’ (1216-1234)

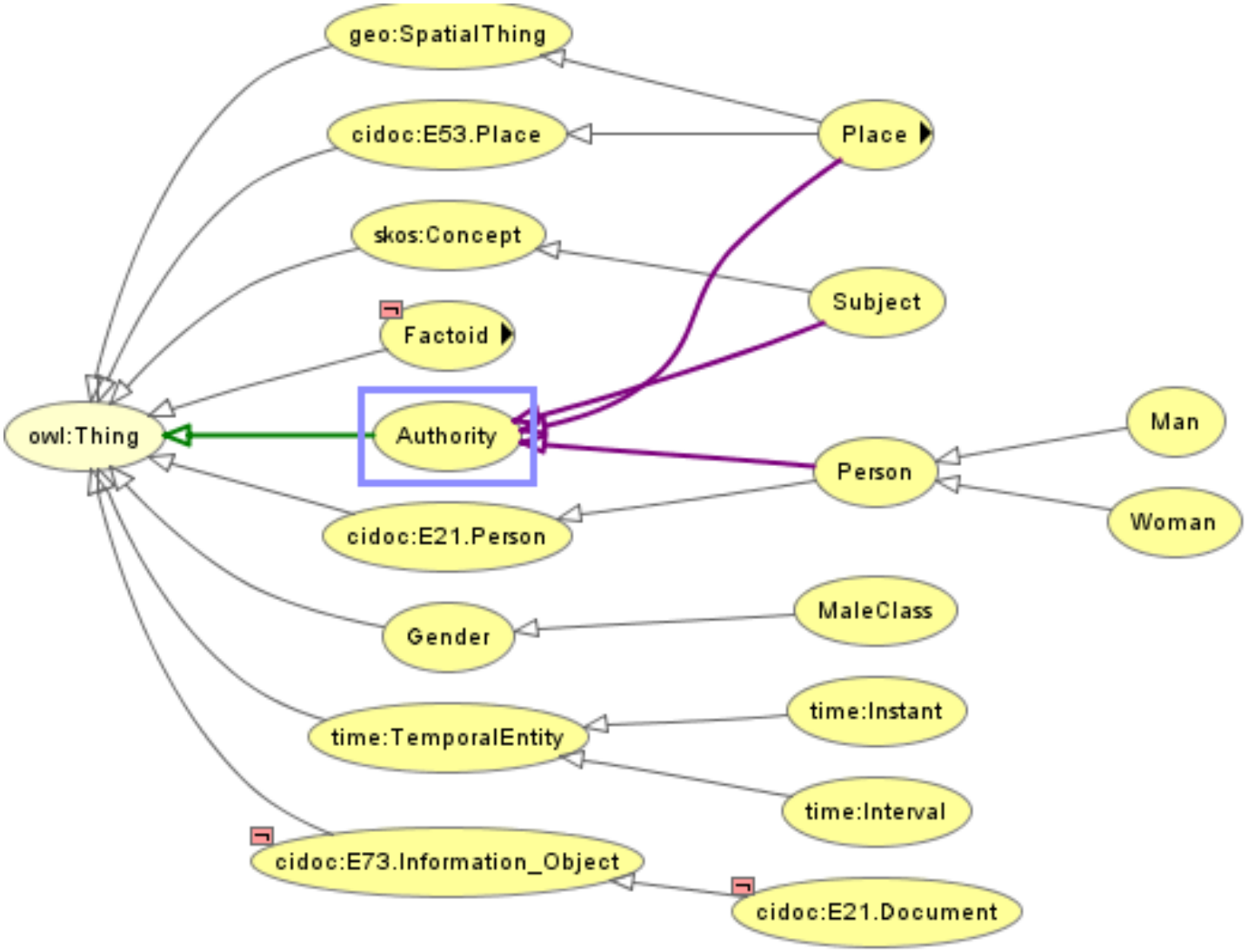
(3) Historical data, assertions, interpretations

Ciula, Spence, Vieira 2008



(3) Historical data, assertions, interpretations

Ciula, Spence, Vieira 2008



(3) Historical data, assertions, interpretations

Ciula, Spence, Vieira 2008

TEI XML: Text

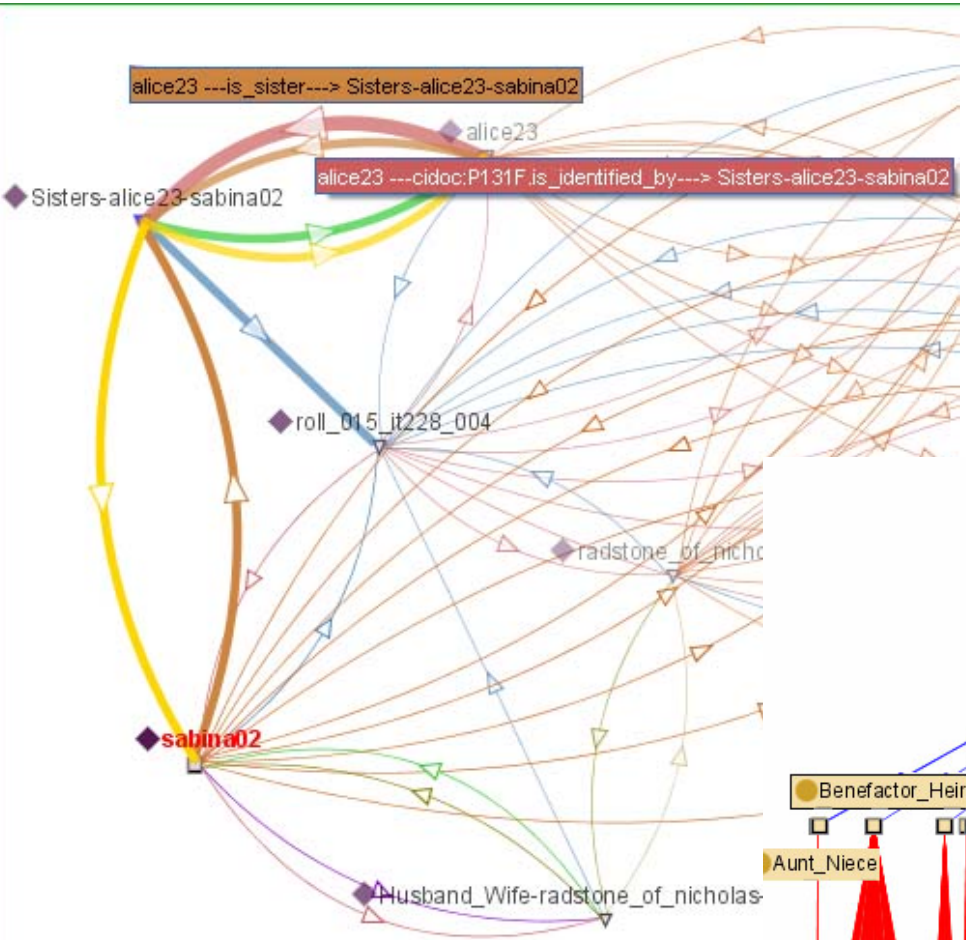
```
<persName type="relName" key="alice23">
      Alice, sister of the aforesaid Alice (sic.)
</persName>
```

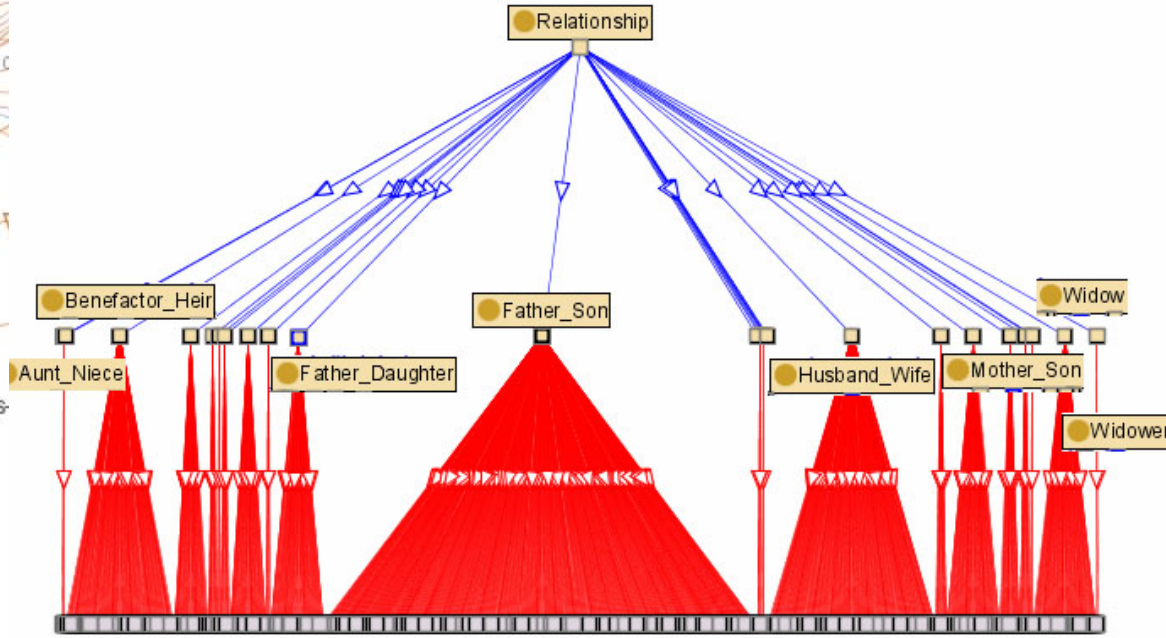
RDF/XML: Ontology

```
<Woman rdf:ID="alice23">
        …
      <identifier rdf:datatype="&xsd;string">alice23</identifier>
      <first_name rdf:datatype="&xsd;string">Alice</first_name>
      <cidoc:P67B.is_referred_to_by rdf:resource=  "#roll_015_it228_004" />
        …
      <cidoc:P131F.is_identified_by rdf:resource="#Sisters-alice23-sabina02"/>
      <is_sister rdf:resource="#Sisters-alice23-sabina02"/>
   </Woman>
```

(3) Historical data, assertions, interpretations

Ciula, Spence, Vieira 2008





Questionnaire to DiXiT Fellows

- 15 DiXiT Fellows → 13 replied (ca. 86.7%)

DiXiT
Digital Scholarly Editions
Initial Training Network

Q1 Does your fellowship project focuses on specific (present or past) material objects (e.g. primary historical sources, literary manuscripts, paintings, maps, drawings)?

- YES - 61.5% (8)

literary manuscript and prints, illuminated manuscripts, early printed books, maps, charters, ledgers, letters, correspondence, photographs, diaries, images of documents/manuscripts

  - **R3 Image** not of "any particular object of significance" - "document images" rather than "(images of) documents"; she/he refers to "documentary context"

    → Digital materiality (**level 1**)

- NOT SURE - (1) 7.7% but …
  - **R2 Thing** "My work focuses on how digital humanists operate in collaboration to build/disseminate/publish digital things. [...] In my frame of analysis there is no level outside the material, since inscription is the foundation of this type of analysis."

    → Materiality of the "digital things" (**level 2** from creators' perspective)

Q1 Does your fellowship project focuses on specific (present or past) material objects (e.g. primary historical sources, literary manuscripts, paintings, maps, drawings)?

- NO - (4) 30.8% but …
  - **R6 Authentic** "project investigates digitization processes in general" - it focuses on "the authenticity of the digitized objects and their relation to the physical object"

    → refers to "documentary / bibliographical level" (**level 1**)
  - **R12 User** "studying how the mental model of the printed text is readapted, how it can be improved, and user requirements" for digital resources

    → refers to "user research methods"(**level 2** from users' perspective)
  - **R13 Worflow** "pilot workflows" as types of the models she/he is building (not enough details to establish level)

Q2 In your fellowship project, do you engage with any (digital) modelling of these objects?

- YES - 61.5% (8)
  1. Studying or practicing digitisation (L1)
  2. Classifying textual variants (L1)
  3. Creating a (often TEI compliant) encoding models of (L1)
  4. Creating ontologies of (L1 and L3)
  5. Applying collation algorithm to literary manuscripts (L1)
  6. Transforming XML-output of literary manuscripts models into a graph (L and L3?)
  7. Creating a digital exhibition of a writer's (L1 and L2?)
- NOT SURE - 15.4% (1)
- NO - 7.7% (2) but **R2 Thing** "My work focuses on how digital humanists operate in collaboration to build/disseminate/publish digital things" (**L2**)
- N/A - 15.4% (2) but **R12 User** "studying how the mental model of the printed text is readapted, how it can be improved, and user requirements" (**L2**) and **R13 Worklow** mentions "pilot workflows" (not enough details to establish level)

Types of (digital) modelling (1-3)

1. Studying or practicing digitisation
   - **R3 Image** Studying the conceptual tools used by document image analysts (how they think about document images) → work entails making "some aspects of the documentary context algorithmically tangible" (**L1**)
   - **R8 Surrogate** Practicing critical digitization of heterogeneous variety of material objects (fetching, preparing the document; lighting, preparing the lens and back; color profiling, measuring, photographing, color and light balancing; rotating, cropping and resizing; checking clarity and color profile from edge to edge; transcription; providing metadata; going through a series of steps to preserve them digitally; making them available for existing digital projects if copyright is cleared)

     → Surrogate thinks digital modelling is "this specific conditioning to create a digital surrogate" (**L1** and **L2?**)
2. Classifying textual variants
3. Creating a (often TEI compliant) encoding models of (**L1**)
   - diplomatic structure of charters
   - mainly typographical structure of literary prints
   - textual variants in literary manuscripts
   - diplomatic aspects of literary manuscripts (focus on genesis and development/production; **see R9 below**)

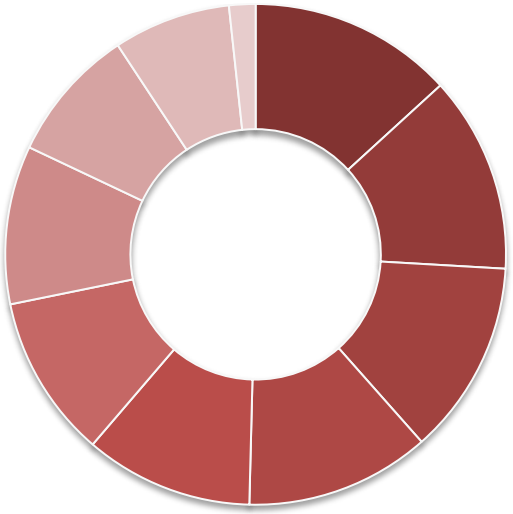
Types of (digital) modelling (4-7)

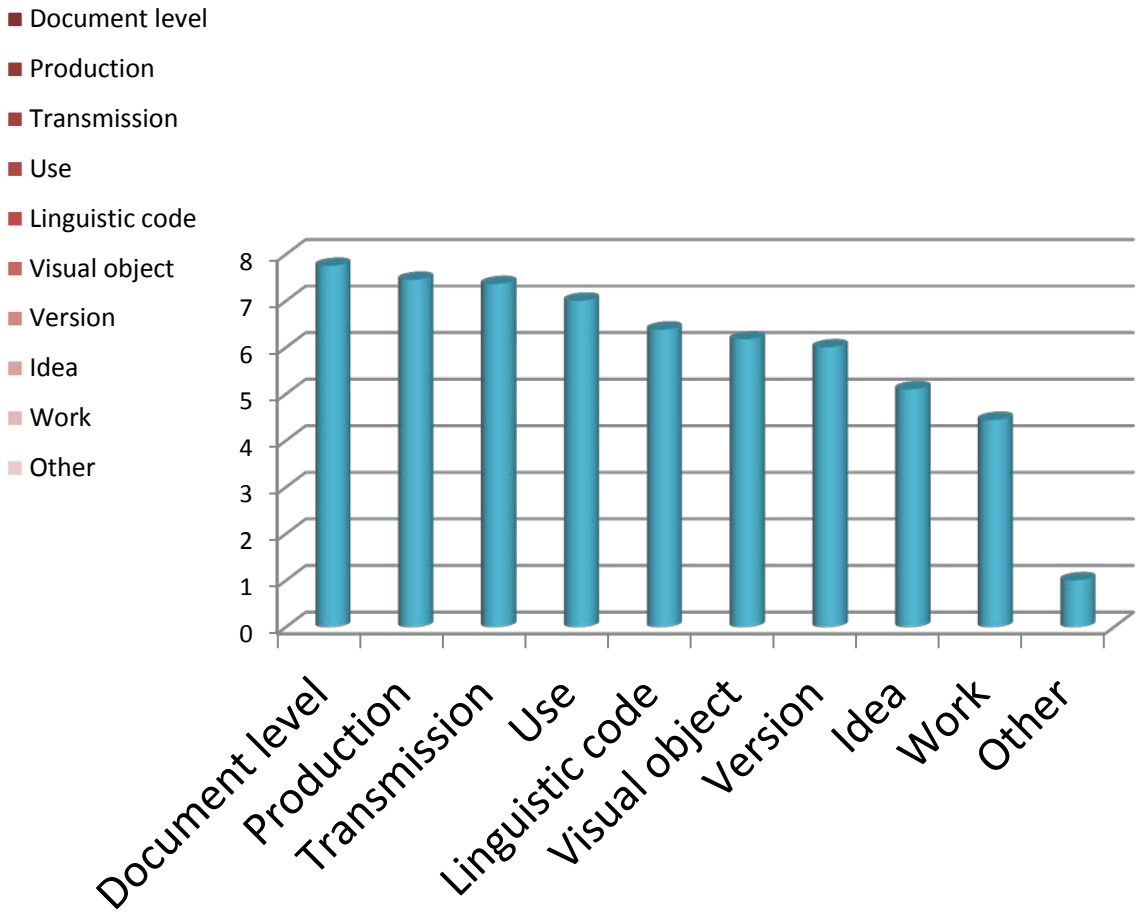
1. Studying or practicing digitisation
2. Classifying textual variants R5 Variant
3. Creating a (often TEI compliant) encoding models of
4. Creating ontologies of (**L1** and **L3**)
   - **R7 Type** mainly typographical structure of literary prints (but also modelling the “production process of the print”)
5. Applying collation algorithm (CollateX) to literary manuscripts (**L1**)
6. Transforming XML-output of literary manuscripts models into a graph (**L1** but...)

   → **R9 Ferrier** production of digital “dossier génétique" implies deduction and interpretation of “meaning and intention of the author” (hidden or explicit in models? **if explicit L3**)
7. Creating a digital exhibition of a writer’s (**L1** but…)

   → **R5 Variant** “conceptual model for disseminating digital editions” (**L2?**)

Q3 If you work with texts (but potentially extensible to other cultural objects or phenomena) in your fellowship project, what of these levels (adapted from Sahle 2012) you focus on (1 ranked as most important)?

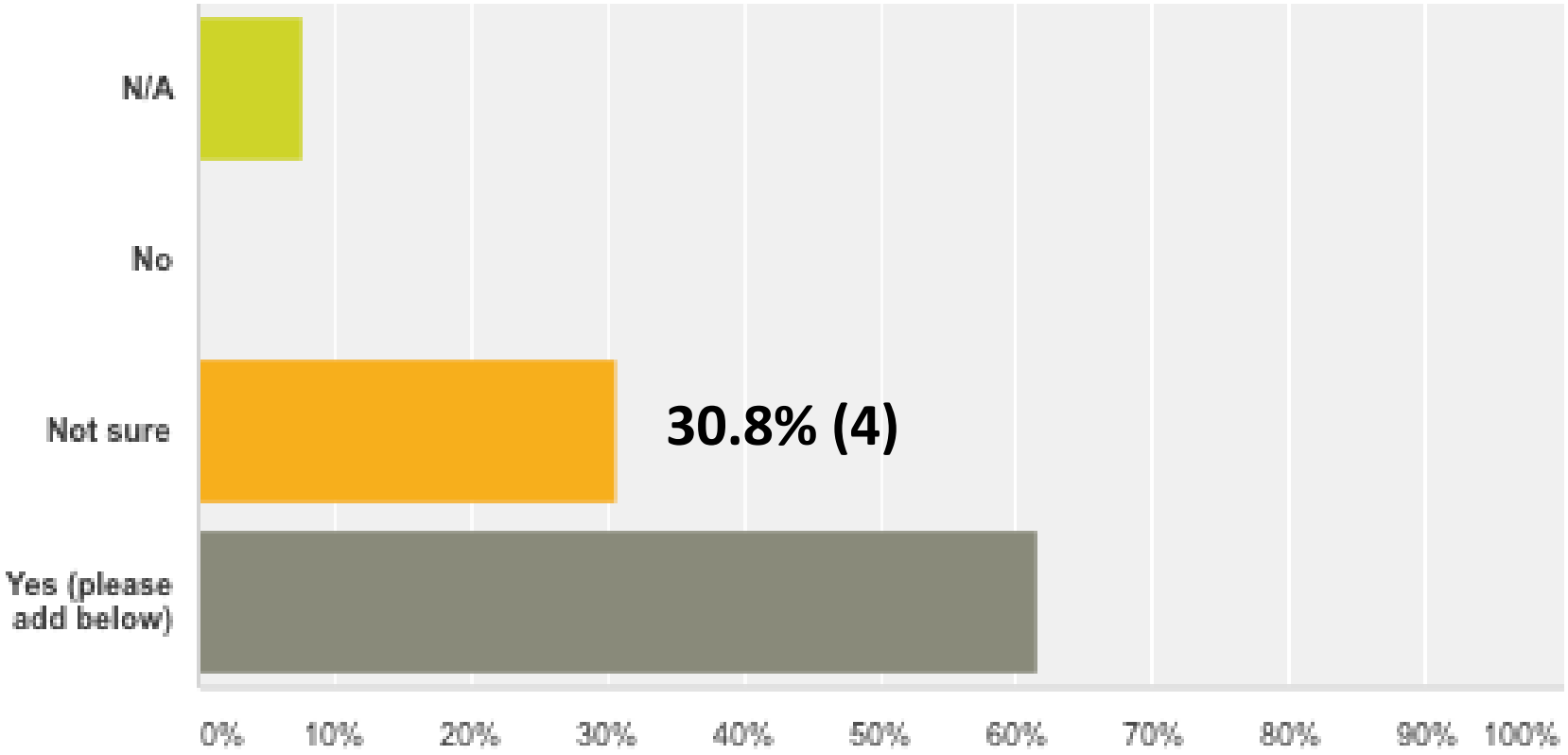




Q4

Could you give examples of some of those levels in your work?

Answered: 13 Skipped: 0



Q4 Examples of levels

- Document level
  - Material support and visual aspects of individual charters; interested in diplomatic structure (L1)
  - Macrotypographical structures of literary prints (L1)
  - Material dimension of documents to digitise, how they respond to digitization process, how many versions, suitability of versions for digitization process (L1)
  - Measures of quality control i.e. authenticity of digitised objects vs. physical object (L1)
  - Aspects of documentary context (including documentary textual metadata) made algorithmically tangible in digital facsimiles
  - What happens when digital things are being built/disseminated/published (no level outside the material inscription) (L2)
  - **R9 Ferrier** Diplomatic encoding focusing on textual genesis and development/production; distinguishing different layers of writing; deducing/interpreting the meaning and intention of the author. (L1 and L3?) [mistake in ranking]
- Production
  - Feature of writing office or chancery responsible for production, transmission of diplomatic model among different writing offices. (L1 and L3?)
  - Production process of the print (L1 and L3?)
  - What happens when digital things are being built/disseminated/published (no level outside the material inscription) (L2)

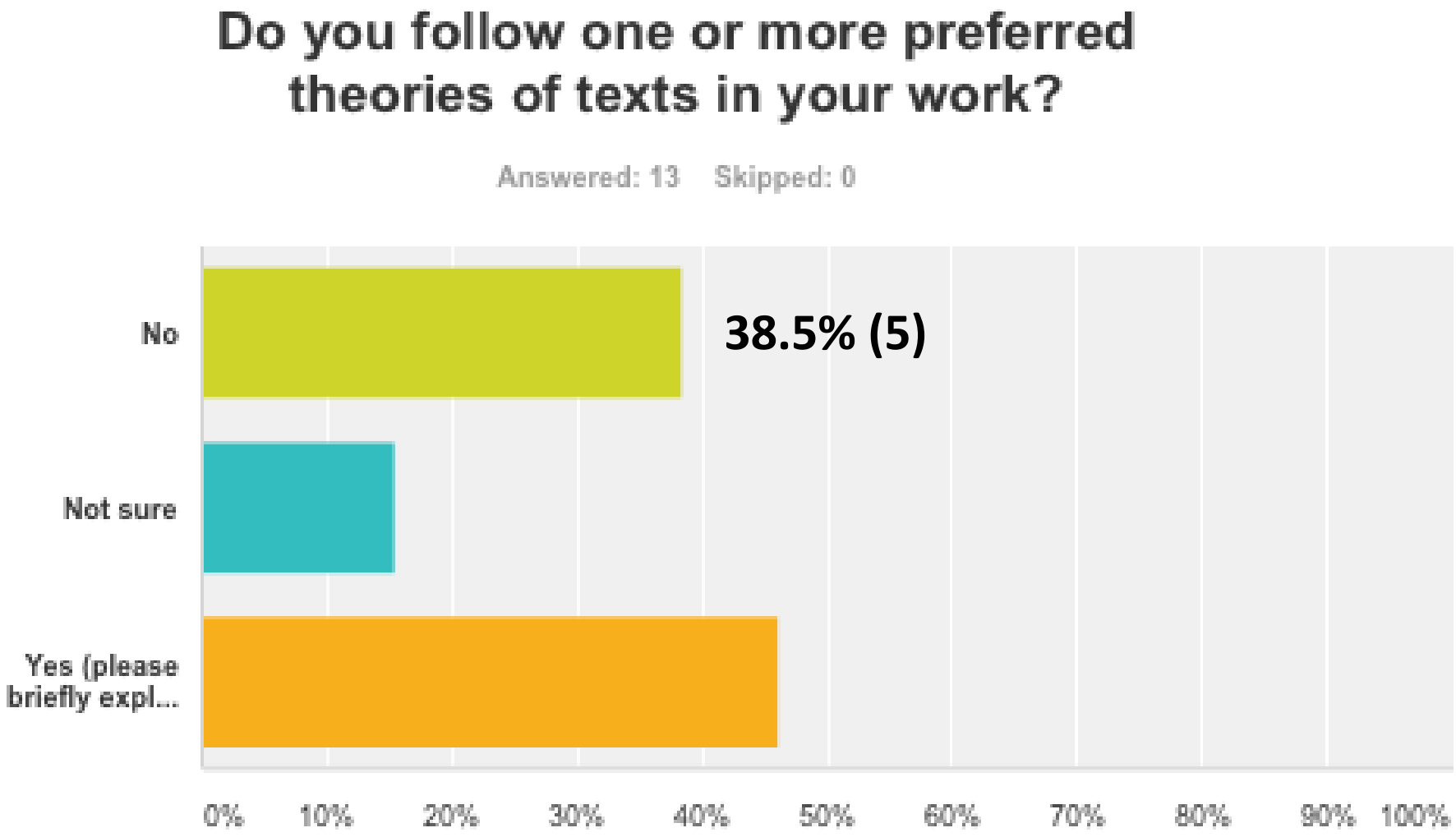
Q4 Examples of levels

- Transmission
  - **R10 Charter** Studying charters as artefacts for power, legitimacy and administration; studying **institutional chain of transmission and reception** of documents, as well as interaction with other rival chanceries (royal chancery, urban councils, etc.) (L1 and L3?)
  - What happens when digital things are being built/disseminated/published (no level outside the material inscription) (L2)
- Use
  - **R10 Charter** Studying charters as artefacts for power, legitimacy and administration; studying institutional chain of transmission and reception of documents, as well as **interaction with other rival chanceries** (royal chancery, urban councils, etc.) (L1 and L3?)
  - **R8 Surrogate How** th**e documents to digitise will be transmitted and how they will be used** (L2: not the documents but their digital surrogates) e.g. by scholarly editors (looking for **editorial areas of interest** e.g. annotations, illustrations, interesting glyphs, reuse of paper, hands , writing that shows up in multispectral imaging, bindings, subject matter or time period of document, genetic concerns such as authors intentions, typical or atypical writing)
  - What happens when digital things are being built/disseminated/published (no level outside the material inscription) (L2)
  - Doing **user testing** (L2)
- Linguistic code
  - **R10 Charter** Very specific and formulaic language; influence/emulation from/of more consolidated models, royal and papal models (to acquire political legitimacy) (L1 and L3?)

Q4 Examples of levels

- Visual object
  - **R8 Surrogate** Material **dimension** of the documents to digitise, how suited for digitization process, **versions** and suitability for digitization process (L1); looking for **editorial areas of interest** (e.g. annotations, illustrations, interesting glyphs, reuse of paper, hands, writing that shows up in multispectral imaging, bindings, subject matter or time period of document, genetic concerns such as authors intentions, typical or atypical writing).
  - **R3 Image** Aspects of the **documentary context** made algorithmically tangible in digital facsimiles
  - R6 Authentic measures of quality control i.e. **authenticity of digitised objects vs. physical object** (L1)
- Version
  - Microtypographical versions of literary prints
  - **R3 Image** Aspects of the **documentary context** made algorithmically tangible in digital facsimiles

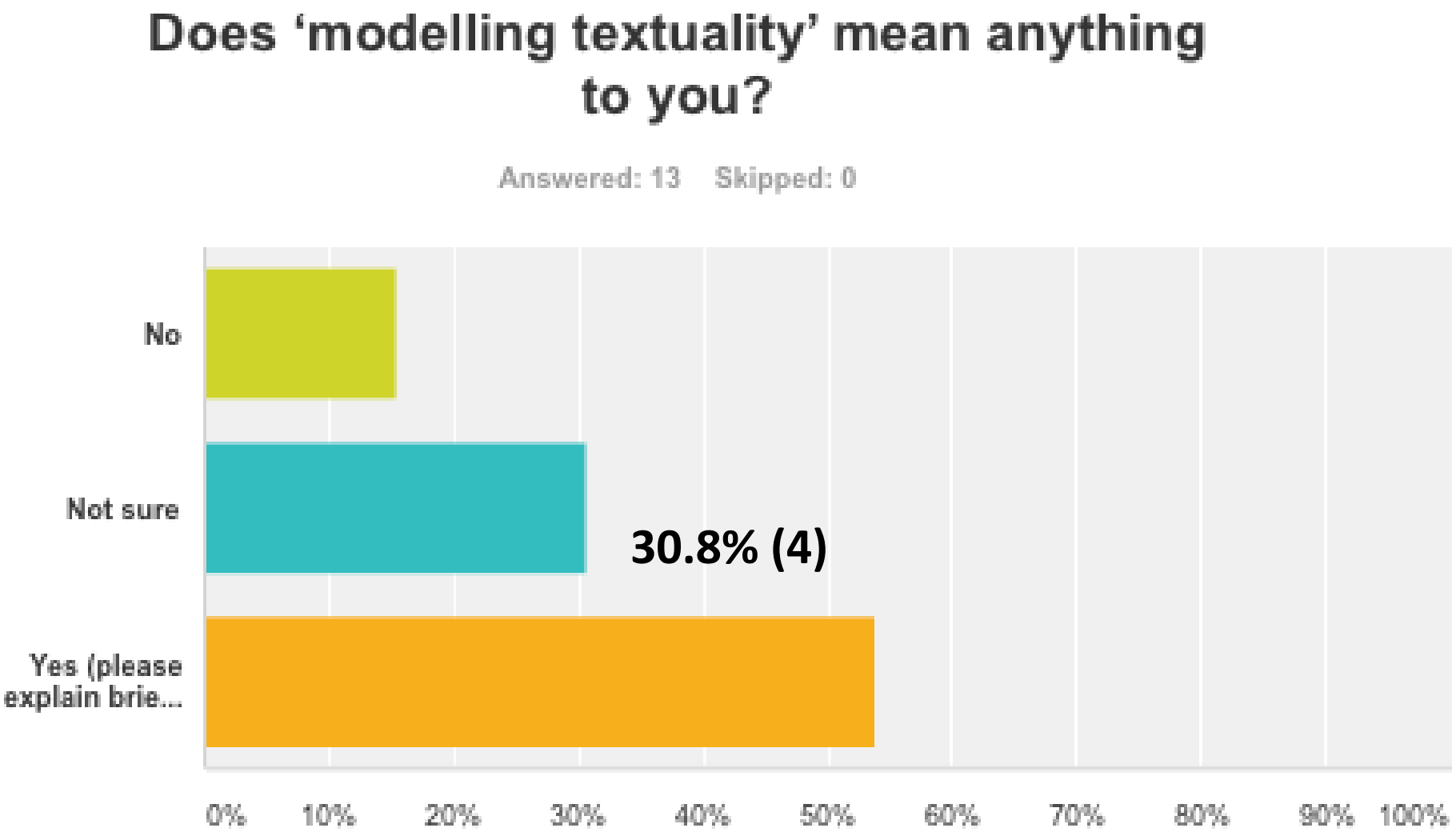
Q5


Do you follow one or more preferred theories of texts in your work?
Answered: 13 Skipped: 0
No
Not sure
Yes (please briefly expl...
38.5% (5)
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

Q5 Theories of texts

- **R12 User** Interested in **all theories** (studying reading performance, research process)
- **R5 Variant** Being aware of all theories and merge them when **useful**
- **Science and technology studies** (R2 Thing)
- R2 Thing **Sociologies of knowledge** and/or **Sociology/ies of texts** (McKenzie) R7 Type
- **Media archaeology** (text treated as physical, material object)
- **Material text** (Shillingsburg)
- **Document-centric** editing (editorial theory)
- **Manuscript as protocol** for writing a text (Ferrer)
- **Text as union of bibliographical and linguistic code** (McGann)
- **Text as a Graph** (i.e. text as an XML tree - a subset of a graph - and Text as a Graph that includes variation)

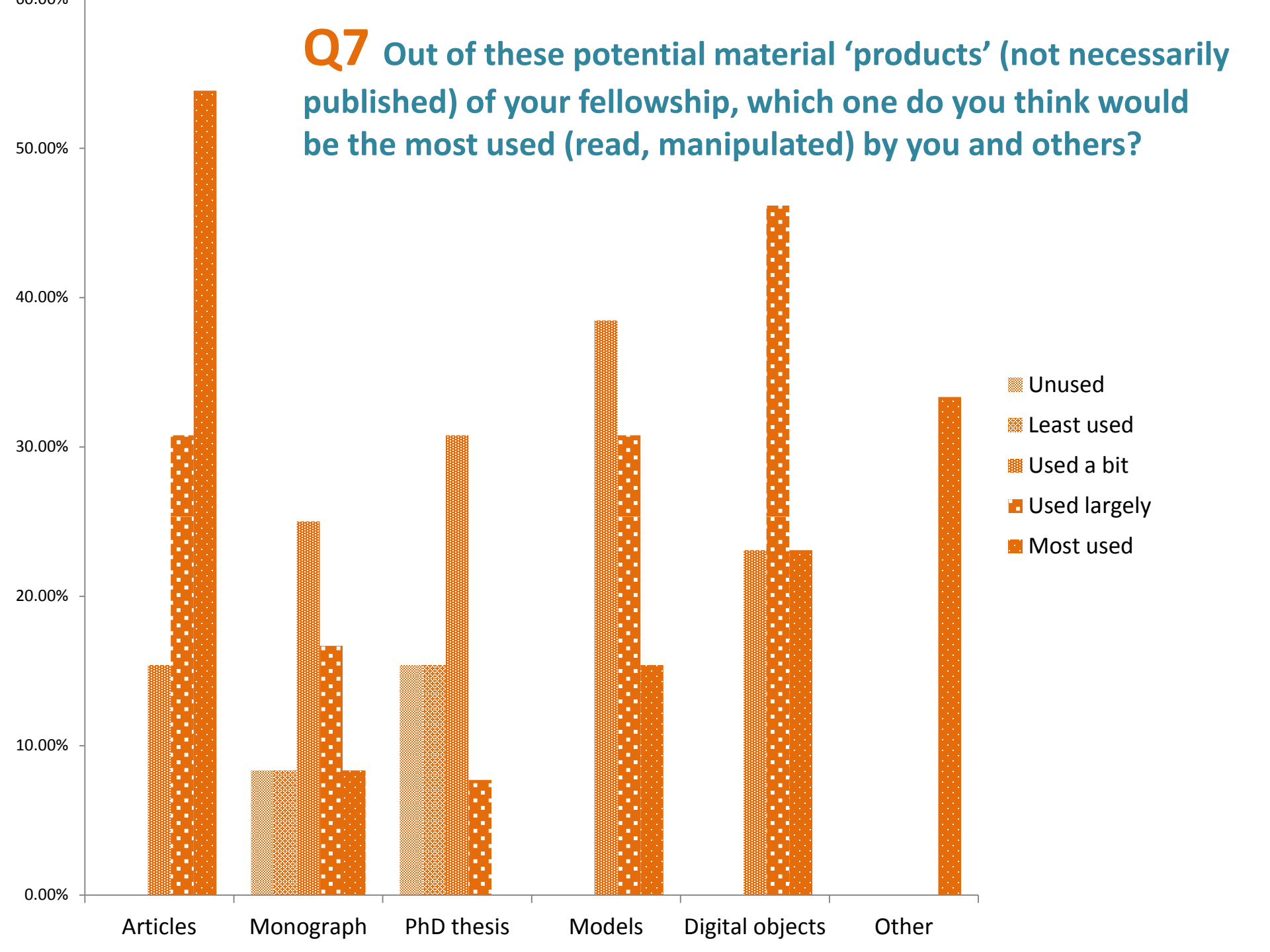
Q6


Does ‘modelling textuality’ mean anything to you?
Answered: 13 Skipped: 0
No
Not sure
Yes (please explain brie...
30.8% (4)
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

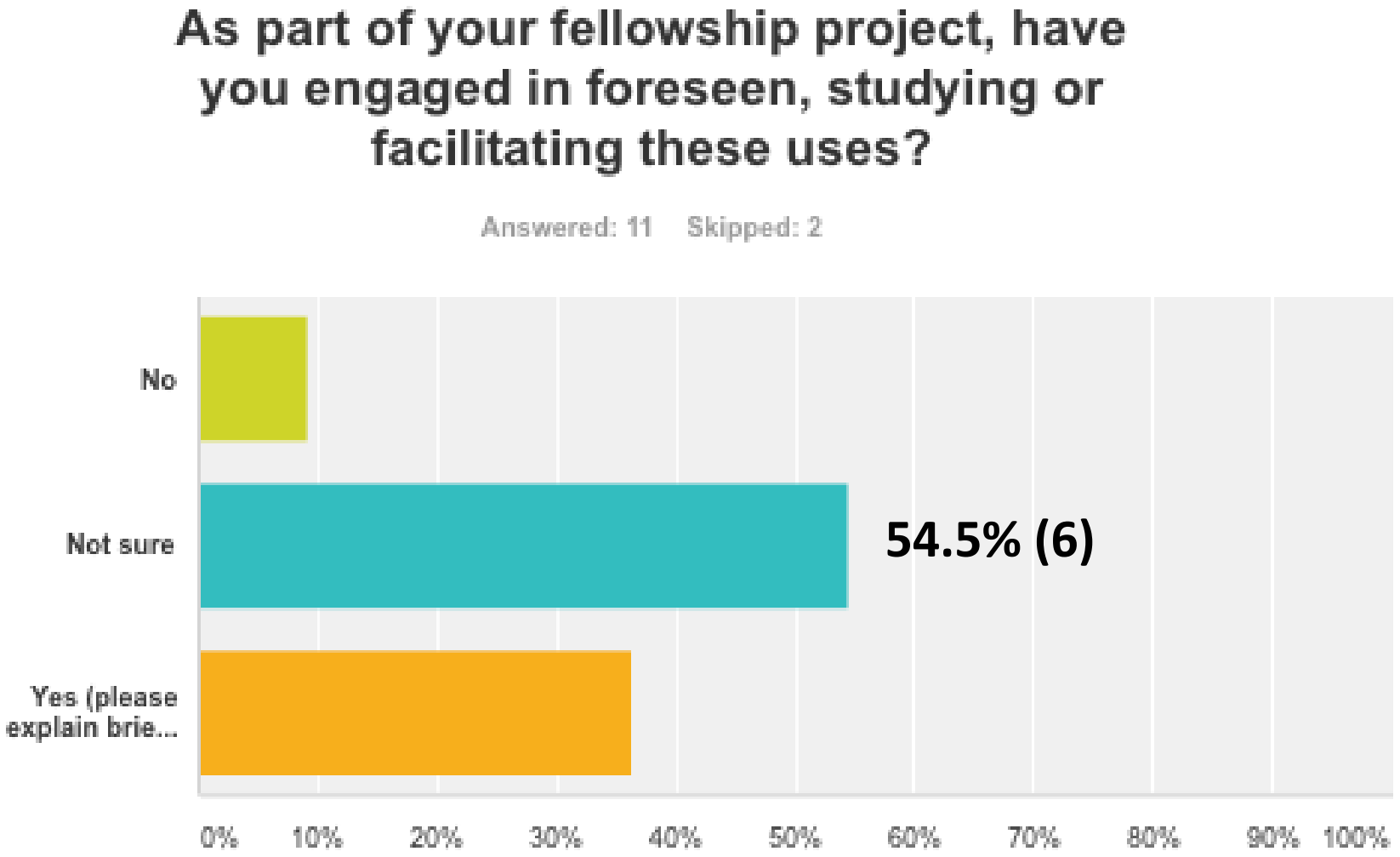
Q6 Meanings of 'modelling textuality'

- Formal modelling (language)
  - **R12 User** Creating an **artificial language** and the **rules** to express knowledge, relations, information about textuality (from "graphical point of view")
  - **R8 Surrogate** - Textual **representation** through **mathematical** expressions
- Conceptual modelling (taxonomy)
  - **R5 Variant** Identifying the **entities** playing a role in textuality (text, work, document, reader, etc.) and their **relationships** [working with ontologies]
- 'Modelling for production' (Eide 2014) - (digital edition)
  - **R2 Thing** Concerned with digital editing in terms of **producing an edition**
  - **R3 Image** (not sure) Different editorial theories on how to approach texts and **towards which purposes** (i.e. what is significant and how it should be dealt with)
- Not transparent (dependent on theory)
  - **R7 Type** Cannot pin it down to one definition. It **depends on the view on the text**. A text is more than its message (refers to philology) but rather dependent on or accomplished by its material context. However; material is even not enough, it depends on many forms of context (time, space, reception etc.)
  - **R3 Image** (not sure) **Different editorial theories** on how to approach texts and towards which purposes (i.e. what is significant and how it should be dealt with) [Q10: "Modelling as a word is still quite confusing to many with its multitudes of meanings"]

Q7 Out of these potential material ‘products’ (not necessarily published) of your fellowship, which one do you think would be the most used (read, manipulated) by you and others?



Q8


As part of your fellowship project, have you engaged in foreseen, studying or facilitating these uses?
Answered: 11 Skipped: 2
No
Not sure
Yes (please explain brie...
54.5% (6)
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

Q8 Types of engagement with 'uses'

1. Study use (sometimes targeting a community of readers/users)
   - R8 Surrogate Thought about **how to design articles and papers** that will be both specifically and generally interesting to different parts of the Crit Dig and DSE community
   - R12 User **User research methods** (user testing of resources to improve them) (**L2**)
   - R8 Surrogate Minimal **studying to see how my work has been used**
2. Facilitate access
   - **Offering papers or posters** to people when they ask
   - R4 Exhibit **Sending articles** , **will share PhD** and people will (**hopefully**) use the digital exhibition when it is made
3. Facilitate re-use
   - R7 Type Build the **typographical model** as **generic** ("base-model") as possible to allow for a re-use in other contexts (**L2**)
   - R7 Type Considering aspects of **practicability** as decisive criterion for **re-use** of a model/technology (**L2**) "However, I still have the feeling everyone is building their own models anyway, this is why I chose "used a bit" above. On the other hand I believe a condensed article on the topic -- describing the model in prose -- will be more used and even cited than the model itself"

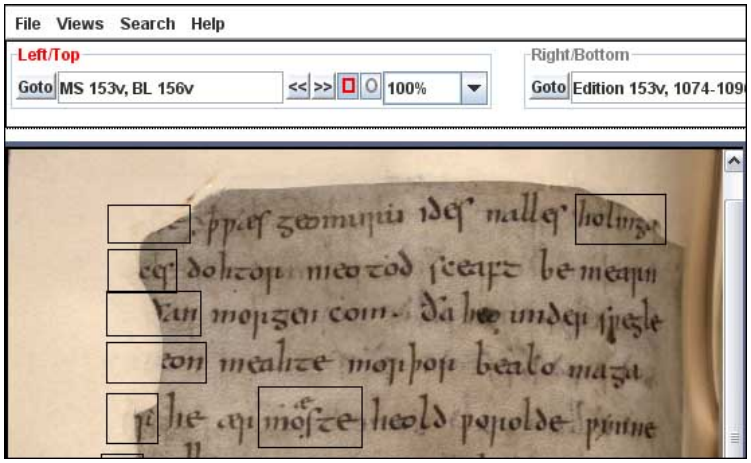
Q9 If you selected models in Q7 above, could you specify what they are?

- Sketches (PhD thesis)
- Diagrams
- **Prototypes** (4)
  - Computational models
  - Prototype that implements text encoding and text collation models
- Pilot workflows
- Data sets (survey statistics and anonymized interview transcriptions)
- **Conceptual model/s** (3) (R7 Type “for me a conceptual model is a type of data model”)
  - Diplomatic models
  - Ontologies (R7 Type “i.e. in RDF, UML”)
  - For disseminating digital editions
- Text graph that implements text encoding and text collation models
- **Data model/s** (3)
  - of diplomatic editions [R10 Charter: possibly not just text encoding?]
  - for text encoding of literary manuscripts
  - for text collation of literary versions

Q9 If you selected digital objects in Q7 above, could you specify what they are?

- **Blog** (4)
  - R6 Authentic - Blog posts
- (project) Website
- **Virtual exhibition** (2)
  - R9 Ferrier - Virtual exhibition of textual genesis
- (project specific) Directory of resources on digital early modern studies
- (project specific) Bibliography of resources on digital early modern studies
- Digital surrogates
- Digital corpus
- **Tools** (3)
  - R5 Variant - In prototype form
  - R3 Image - For working with institution specific material set and resources
  - R9 Ferrier - Open source module of collation software
- **Digital edition** (2)
  - R7 Type - Digital scholarly edition
  - R9 Ferrier - Digital edition of selection of literary manuscripts

Conclusions



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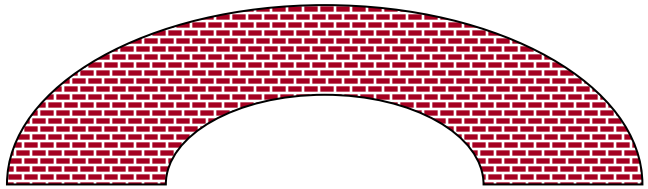
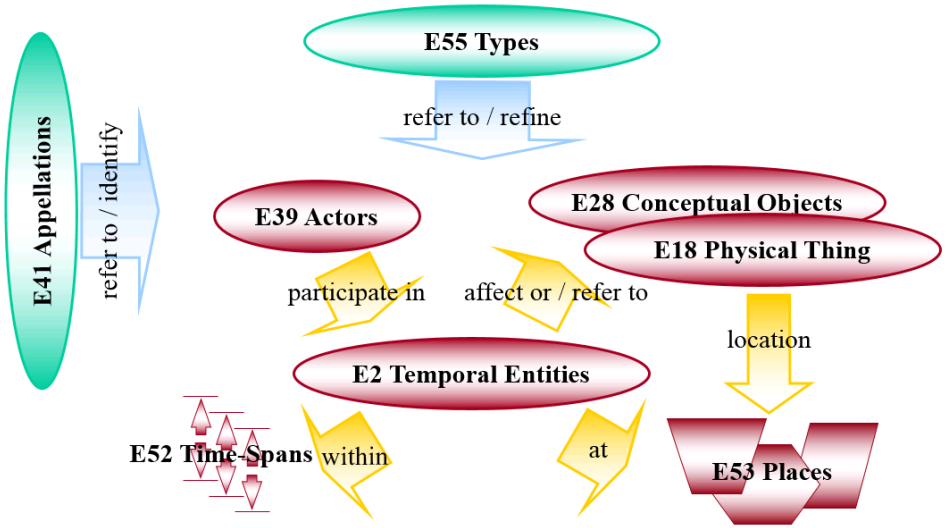
- Research agenda
  1. Material primary sources → model of
  2. Material 'publications' → model for
  3. Socio-cultural agencies → conceptual modelling
- Societal resonance





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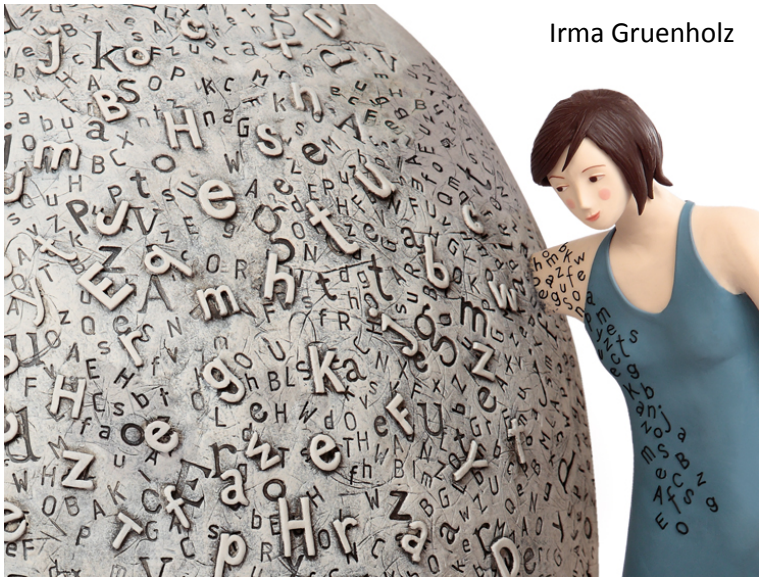
Thank you!
Questions?



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