



engage
Engaging research with
e-Infrastructure

EPSRC

Engineering and Physical Sciences
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Arts & Humanities
Research Council

Evaluating Evidence, or How to support reasoning with evidence

e-Science and Ancient Documents project

Ségolène M. Tarte
(OeRC & Classics Faculty, University of Oxford)

Object, Artefact and Script workshop
Edinburgh, 08.10.2009



C S
A D

Oxford University
Centre for the Study of Ancient Documents

UCL Department of Information Studies

oerc
Oxford e-Research Centre

E-Science and Ancient Documents project

- Targeted documents:

- Stone
- Lead
- Wood



- Aim: develop a web-based Interpretation Support System (ISS) for ancient and damaged documents:
 - Image capture and processing (digitization, feature detection, web-services)
 - **Recording tool capturing the chain of evidence and reasoning enabling to reconstruct the hermeneutic process (argumentation theory and epistemology)**
 - Access external knowledge bases, e.g. linguistics, palaeographical, archaeological (contextual encoding, web-services)

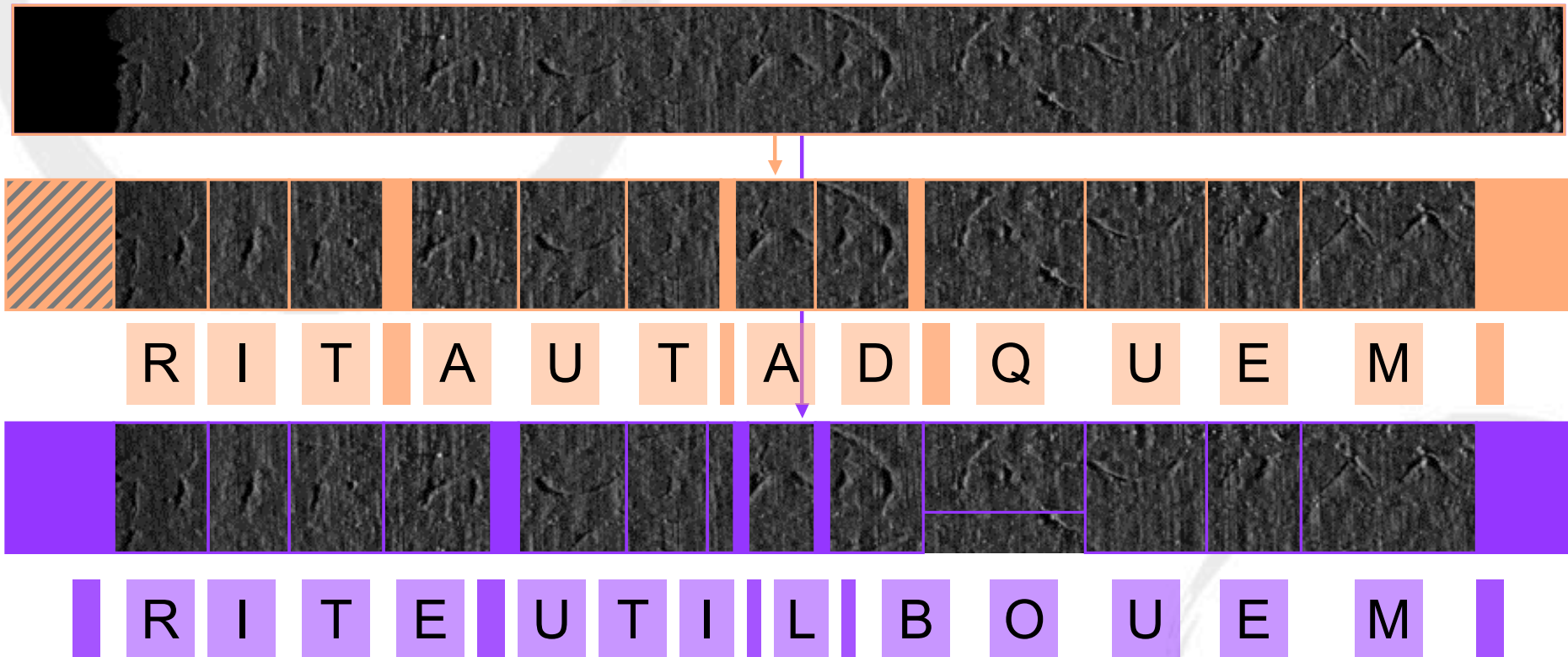
Frisian tablet.
Original
transcription by
C.W. Vollgraff,
1917 -- "*De
tabella
emptionis
aetatis Traiani
nuper in Frisia
reperta*"



New
transcription by
A.K. Bowman,
R.S.O. Tomlin,
and K.A. Worp,
2009
forthcoming --
"*Emptio bovis
Frisica: the
'Frisian ox sale'
reconsidered*"

→ Digital
pictures
by Dr. C.
Crowther

“The case of the disappearing ox” (sic)



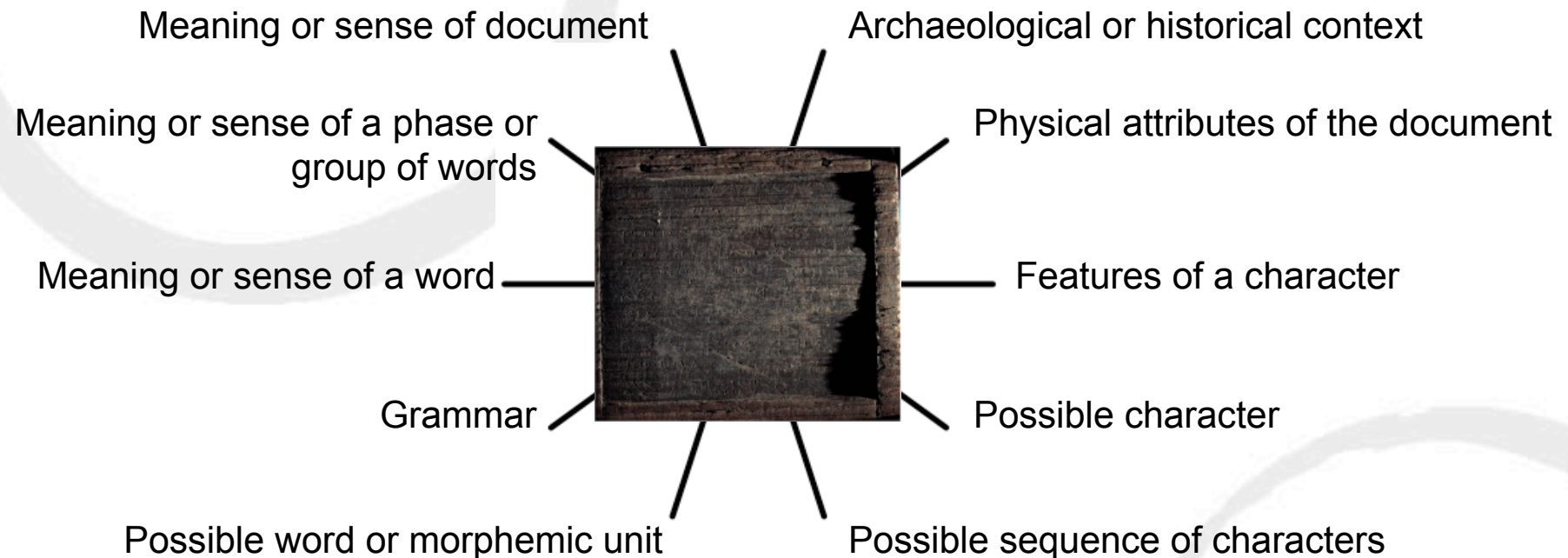
“The case of the disappearing ox” (sic)



Handwritten text in black ink, appearing to be a mix of letters and symbols, possibly a code or a stylized message. Below the handwriting, the letters R I T A U T A D Q U E M are displayed in orange boxes.

Handwritten text in blue ink, appearing to be a mix of letters and symbols, possibly a code or a stylized message. Below the handwriting, the letters R I T E U T I L B O U E M are displayed in purple boxes.

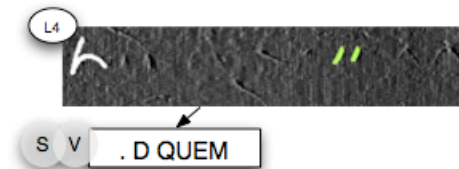
The Transcription and interpretation process: levels of reading.



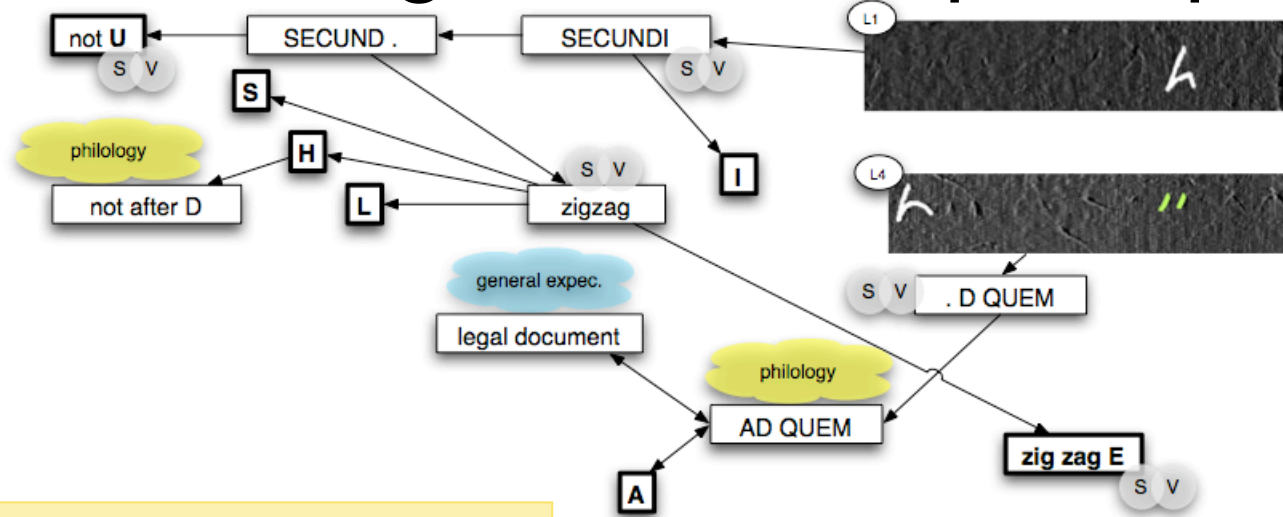
[Terras 2006, Rumelhart and McClelland 1986]

An evolving network of percepts

- Skilled vision
 - Perception & cognition
 - Specialised visual skill, expertise [*Gibson 1953*]
 - Connoisseurship [*Neer 2005*]
 - Memory association, mental organisational map



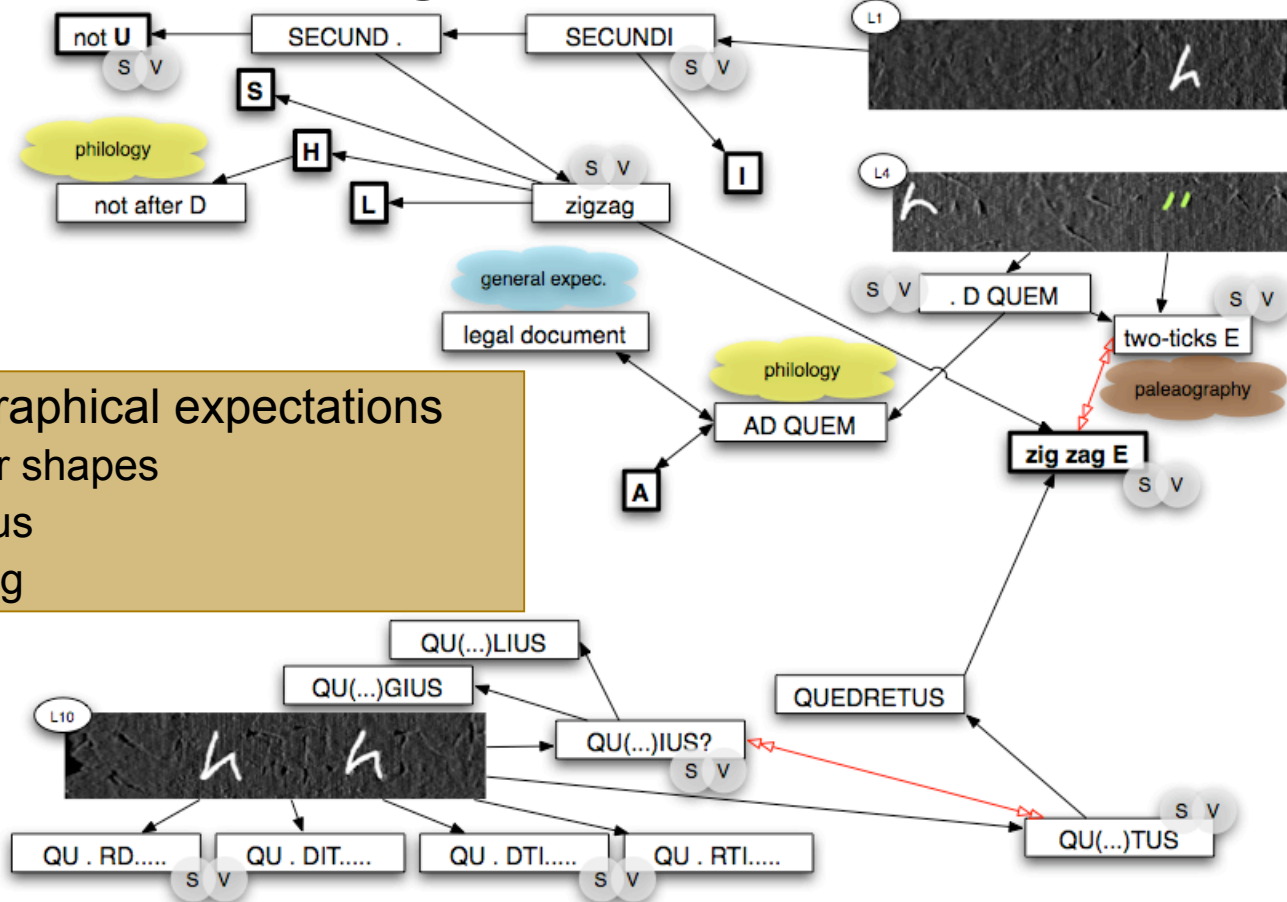
An evolving network of percepts



- Philological expectations
 - Occurrences of letters
 - Typical formulae
 - Linguistics

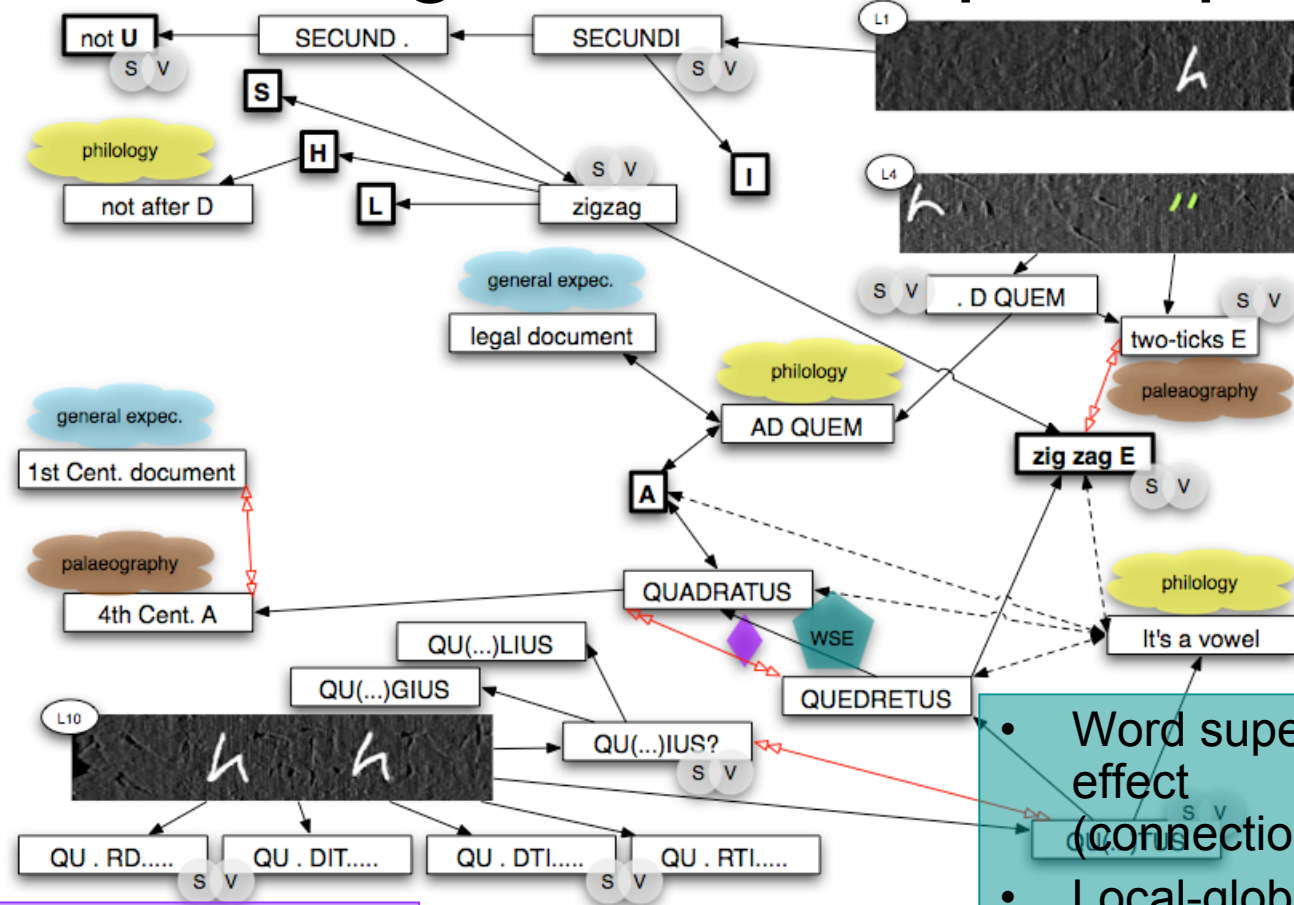
- General scholarly expectations
 - Layout and language of a legal document
 - Physical aspect of the object (holes, notch)

An evolving network of percepts



- Palaeographical expectations
 - Letter shapes
 - Ductus
 - Dating

An evolving network of percepts



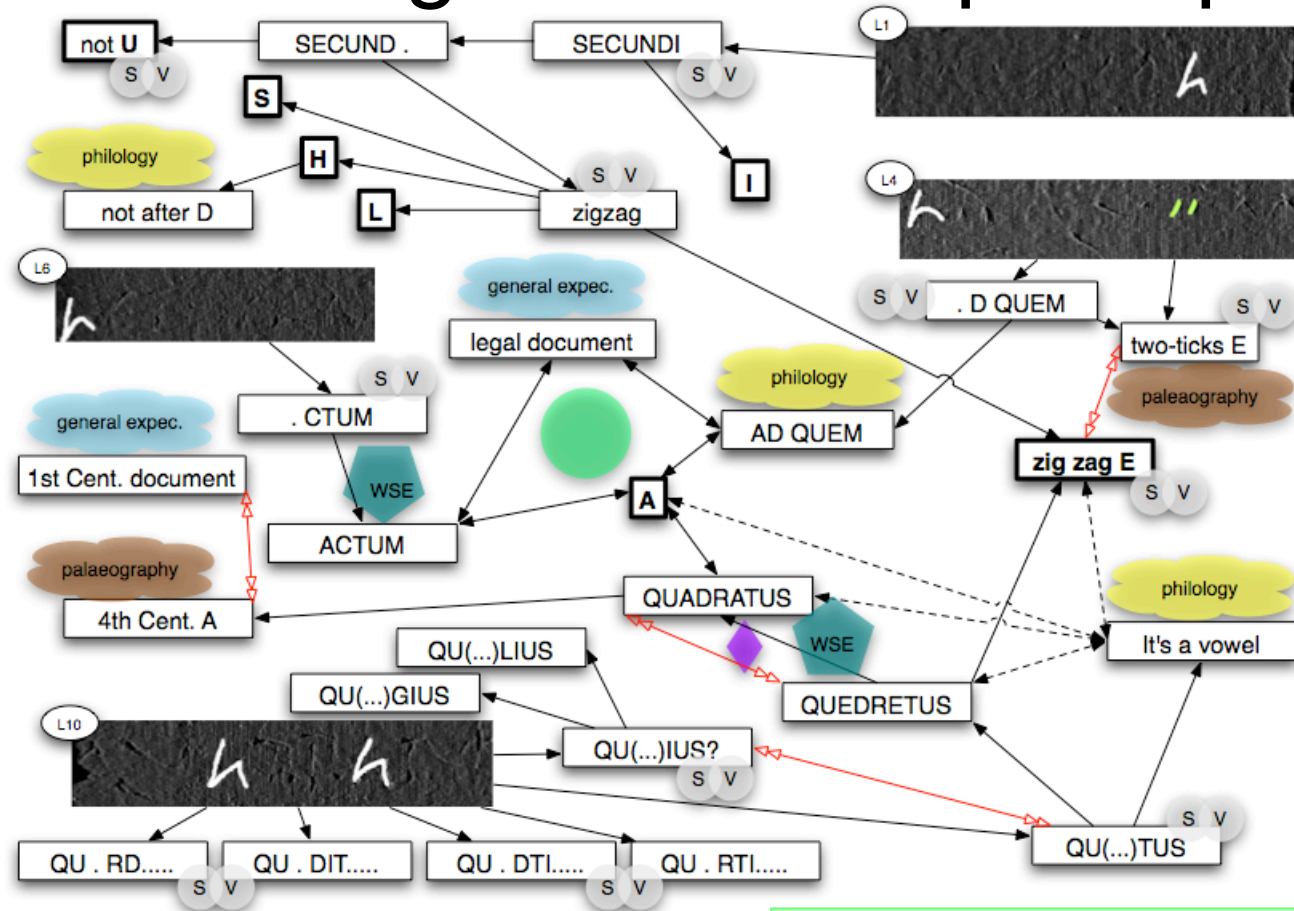
- Aspect shifting/dawning
- Seeing *that* vs. seeing *as*

- Word superiority effect (connectionism)
- Local-global oscillations

17th Nov. 2009 "Understanding image-based evidence", Oxford

Evaluating Evidence

An evolving network of percepts



Mutual support

Dr Floris Bex:

“Reasoning with evidence”

- How are hypotheses and rationales captured in the legal context of witnesses’ narratives and forensic evidence?
- What tools can AI provide to support the capture of reasoning?
- What kind of formalism would be best adapted to our case, and assist the unravelling of an interpretation?