

Issues in Spatio-Temporal Technologies for the Humanities and Arts

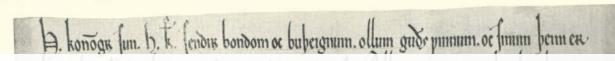
Event Chronology & Conceptual modelling

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Charter by king Hákon Hákonsson 1225

Detta brez sea da horira a cikium quadu guto oc sma. Allum mannum man hat her horirin kunt pena. it pikin i diuppie la at pomo ul konogiomfenfoll. En hones bo nu komen un dir gud. oc heilagha kirkiu. oc eighu nu beupar. oc rembrif menn ac pardyeita hana. oc ujitar mo shea sem gud gern ar at tacka. sen ul rozlo. oc pidrynstan heilghum staudum ul upp halz or implutning ! In par heres perce oft. or idulegha fir of kare, at bond puls nu nersa pikina. oc tit sinn diegha hyar flict sem pide ma koma. En pein en hara piskingoz va eda julia gera umim logh. or rettende. or pat er fkjufarnd fkjurs. or pomfidpenna en til. Tytha nu bat hafa ar onne m raungu nýmarlom, er eight hourdu prende bena 7 pirm mem, um dagha baratz konongs grenda pars. 7 nga.k. funar h. oc bena bro oza. eda um dagija, 9. magnik randur paudur part or magni 2.7 partoz eight bena er al skal rojina huadke on ne pifkim. pa fkulu beni ce ba dirit hapa driet i pine. faca ap off rycidi oc reiffingum. 7/torom pragioldum. pirir byi at per pilium eingum bat bola hyatke robum ne cakum, ac some gud z herlagha kurkun, ce per florlum alla gramd z upreist ar tacka barde hessa hemis oc annass.

Charter by king Hákon Hákonsson 1225



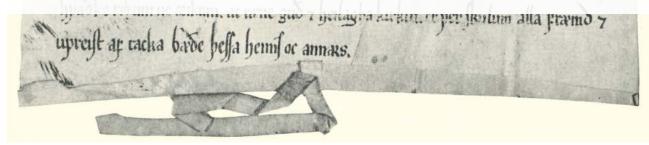
There are no dates in the text. Dating of the document is based on the facts:

There exists another charter written in the same hand in the castle of the Bishop of Oslo. This charter has an explicit dating: "Gregores mœsso deghi ... Anno ab incarnatione. mº. cc.xx.iiii."

Incarnatio domini – annuntiatio Mariae: March 25th, year 1 BC Gregory mass: March 12th

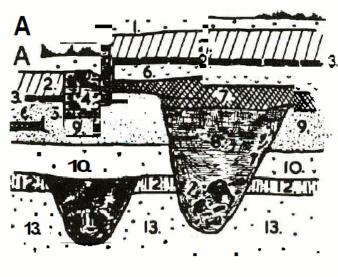
implies 12.03.1225

On that basis the charter is dated to "around 1225"





Archaeology: Section and Harris matrix I



Specimen section through soil strata of a frequently inhabited site.

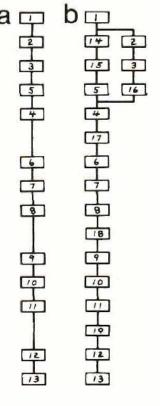
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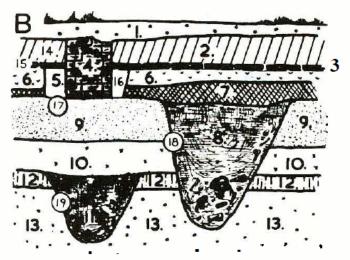
- 1. Modern top soil.
- 2. Debris from seventeenth century building destroyed by fire.
- 3. Tile floors of burnt house.
- 4. Foundation of internal house wall.
- 5. Building trench for wall.
- 6. Sixteenth century made soil.
- 7. Made soil containing fifteenth century pots-
- 8. Fourteenth century rubbish pit.9. Late Saxon or early mediaeval accumulated soil.
- 10. Third to fourth century Roman levels.
- II. Second century Roman rubbish pit.
- 12. Soil disturbed during first century inhabitation.
- 13. Natural gravel.

Scale: 1 inch-1 foot.

STRATIGRAPHIC SEQUENCES

COMPARISON OF THE





I. Modern top soil.

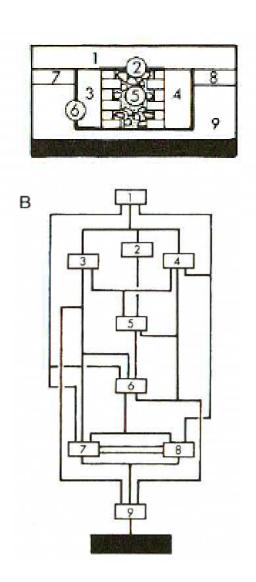
- 2. Debris from seventeenth century building destroyed by fire.
- 3. TILE FLOOR OF BURNT HOUSE
- 4. Foundation of internal house wall.
- INFILLING OF BUILDING TRENCH FOR WALL
- 6. Sixteenth century made soil.
- 7. Made soil containing fifteenth century potsherds.
- 8. FOURTEENTH CENTURY RUBBISH DEPCGIT
- 9. Late Saxon or early mediaeval accumulated soil.
- Third to fourth century Roman levels.
- II. SECOND CENTURY RUBBISH DEPOSIT
- 12. Soil disturbed during first century inhabitation.
- 13. Natural gravel.
- 14. DEBRIS FROM SEVENTEENTH CENTURY BUILDING
- 1s TILE FLOOR OF BURNT HOUSE
- INFILLINGOF BUILDING TRENCH FOR WALL
- BUILDING TRENCH FOR WALL
- 18 PIT OF FOURTEENTH CENTURY OR EARLIER
- PIT OF SECOND CENTURY OR EARUER

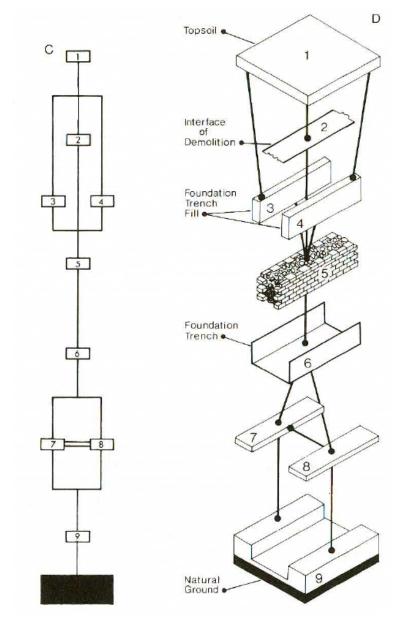
(Alterationsa n additions, E. C. Ham. 1975 I

(Hume, I N 1953 Archaeology 1nBritain. Fig. 1)



Archaeology: Sections and Harris matrix II





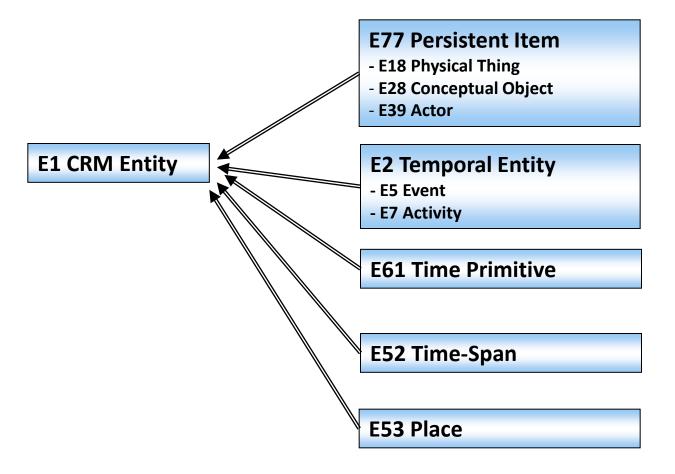
E.Harris: Principles of archaeological stratigraphy

Ontology

- An ontology is a conceptual model, that is, a formally defined model resulting from an analysis of (practice) in specific field
- not necessarily a data model in the computer science sense.
- Core ontologies with universals
- General ontologies with particulars (thesauri/authority systems)



CIDOC CRM: some relevant classes

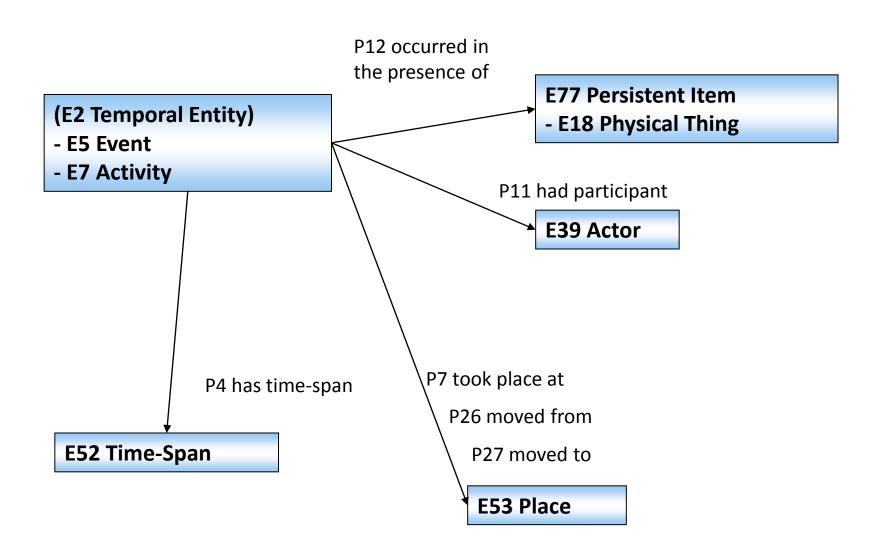


Definition: www.cidoc-crm.org

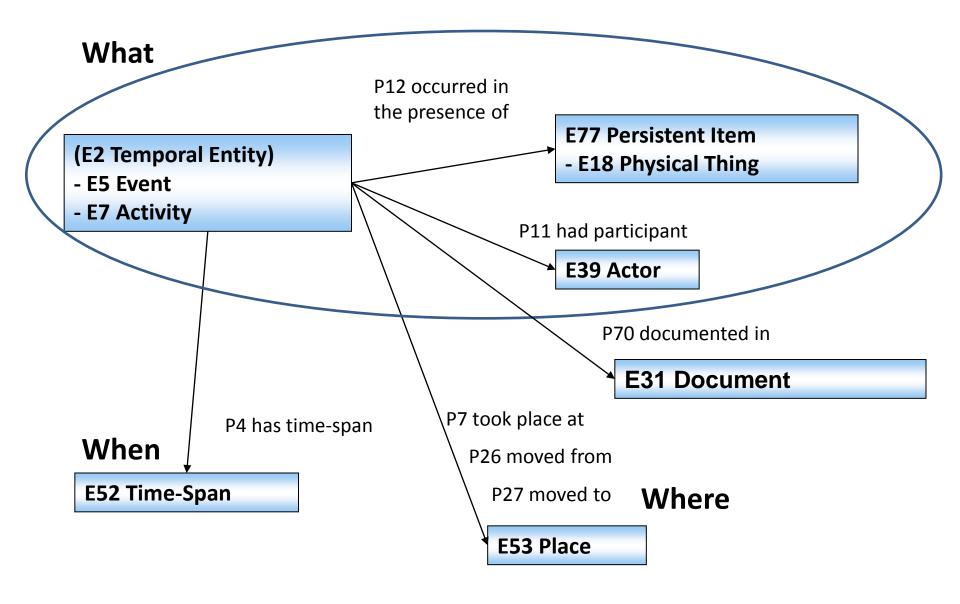
OWL implementation: www.erlangen-crm.org



CIDOC CRM

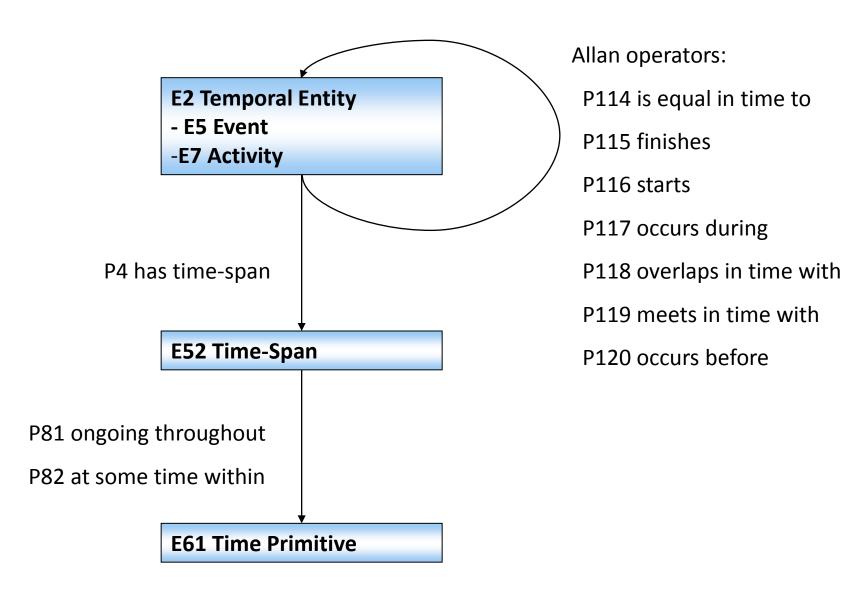


CIDOC CRM: What, when, where

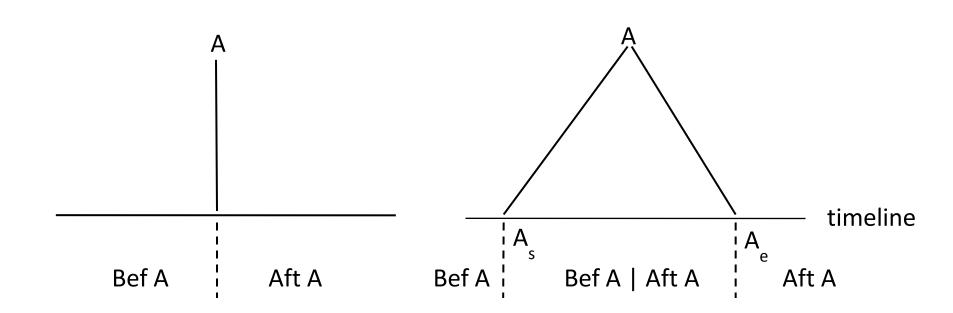




CIDOC CRM: temporal entities and time

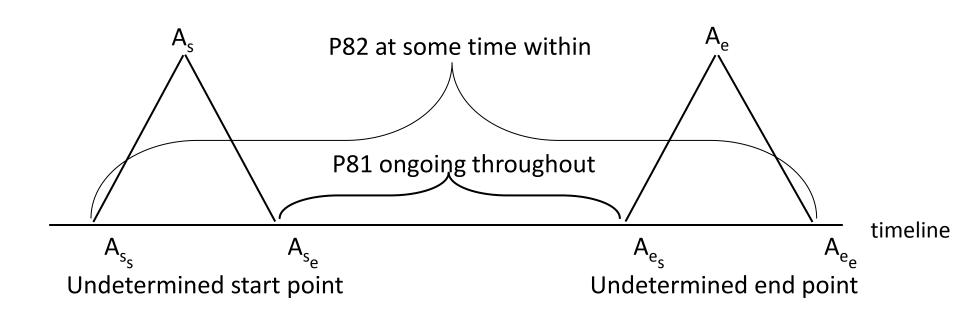


Determined and undetermined points in time



Possible states of information

Interval (A_{s.}A_e) on the timeline for temporal entity E



 A_{s_c} : E must have started after

 A_{s_a} : E must have started before

 A_{e_s} : E must have ended after

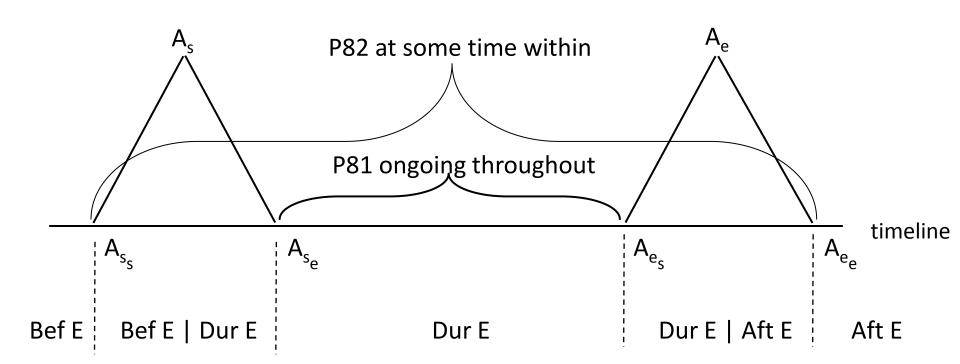
 $A_{e_{a}}$: E must have ended before

Validity conditions:

$$A_{s_s} < A_{s_e} < A_{e_e}$$

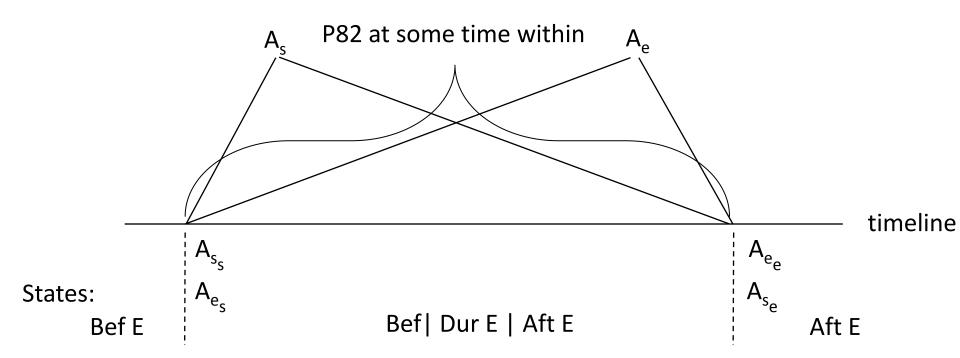
$$A_{s_s} < A_{e_e} < A_{e_e}$$

Interval (A_s,A_e) on the timeline for temporal entity E

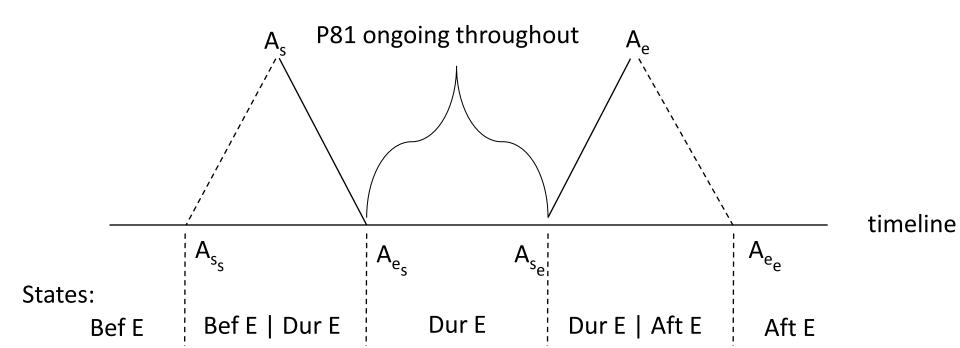




Example – only TPQ and TAQ is known



Example – flourit known, lifespan unknown



Summing up

- CIDOC CRM is a useful tool for design of information architecture
- Events / temporal entities are central in documentation
- Relative chronology of events can be expressed by the "Allan" operators (relations)
- Timespans can be expressed as four values on a timeline
- A deduction system for event chronology can be given an efficient implementation based the quadruples on the timeline

Thank you

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