## 474: Editorial Check of CRMarchaeo

Large issue, breaks to a number of sub-tasks

### Scope-notes of AP25 occurs during (includes), AP26 overlaps in time (is overlapped in time by)

Rephrasing involved –take out the reference to E52 Time-Span (HW by SdS)

**Discussion points:**

* the FOL for AP25 must be added to the document (HW-CEO)
* The domain and range of AP25 and AP26 have been deliberately been set to E2 Temporal Entity vs. E4 Period, as they could refer to instances of E3 Condition State
* AP25 should be made isA two temporal primitives: P185 (OK) and P176i starts after the start of (as prescribed at the migration paths offered at the appendix of CIDOC CRM v.7.1)

**Decision**: in favor of proposed changes for AP25 and AP26

**HW**: CEO to add the FOL axiom for transitivity to AP25 AND add the missing superproperty for AP25

The revised scope notes can be found in the [appendix](#_Scope_notes_of).

### Scope-note of AP7 produced (was produced by)

The SIG reviewed MD’s HW (rewrite of the scope-note for AP7) and reworked the example as well.

**Discussion points**:

**SdS**: if we have access to the excavation records for Akrotiri, we might look for the ID numbers for some of the layers.

**Proposal**:

Vote to accept the scope-note and the example as is now and start a [new issue](#_[NEW_ISSUE]), where to discuss the example making use of the original data from the excavation records for Akrotiri.

In favor: 7  
Against: 0

**Decision**: accepted. The revision of the scope note and example can be found in the [appendix](#_Scope-note_of_AP7).

HW: CB, EK

### Scope-Note of AP9 took matter form (provided matter to)

The text for the scope note was missing, MD put together a text.

Vote to accept the scope note for AP9:   
In favor: 7  
Against: 0

**Decision**: accepted, references added to the example. Details in the [appendix](#_AP9_took_matter).

### Label and scope-note of AP11 has physical relation (is physical relation of)

1. Re. the label of AP11:

**Proposal** by MD to alter the label of the property to because the property reads terrible (especially in the inverse form).

Suggested label: AP11 has physical relation to (is physically related by).

However, the inverse property does not work well in English. Long discussion, involved a **number of counterproposals**:

* AP11 has physical relation to (is physical relation with) –was considered suboptimal; it’s not directed, but symmetrical.
* AP11 has physical relation to (is physical relation from) –preferred it shows direction
* AP11 has physical relation to (is physically related to) – modelled after p69 has association with (is associated with), but was generally dispreferred because it does not show the directionality.

It was suggested that the labels should be tested against the examples for AP11 and AP11.1 [(see below)](#_Examples_of_AP11):

1. Re. the scope-note of AP11: SIG thought it OK, following some minor editing by MD.

**Decision**: the label of the forward going property will change to **AP11 has physical relation to** - the inverse property will be discussed in a separate issue; the **scope note** is as found in the [appendix](#_Scope-note_of_AP11).

### Examples of AP11 has physical relation (is physical relation of) and *AP11.1 has type: E55 Type*

MD presented his HW.

**Discussion**:

**SdS**: The types mentioned in the .1 property examples need to be reworked. “wall-slot cut for” stands as the description of a process, not a type. A cut is the absence of something, it creates an interface. The interface was created by a wall-slot having been cut, it’s not the relation, which two things stand in. In the example, the wall and the floor do not have a relation among them. It’s the kind of example not to be found in records, but the justification for an interpretation of the records. This has not been observed, but inferred.

**KM**: There are certain things that you can observe in the field, and things that one can infer by other evidence (dating, etc.). Some of the things happen after the excavation, they are inferred; not observed.

**MD**: The purpose of the example is to showcase that interpretations can change, in the face of new evidence.

**GH**: he has documented the relation of layers (on top, under). Can these specific restrictions be introduced as shortcuts or properties in CRMarchaeo? Because it saves up a lot of time to be able to evoke them. The most typical relations that are documented are \*over\* and \*under\*.

**MD**: in building archaeology there are more relations that need to be documented.

**SdS**: from the perspective of the UK, much archaeology involves walls, and even though \*over\* and \*under\* are relations frequently documented, there are many other many types of physical relation documented as well. Maybe we should add more straightforward relations in the examples.

**Decision:** The proposed example was redrafted and accepted. For details, see [appendix](#_Scope-note_of_AP11).

### Label and examples for AP13 has stratigraphic relation (is stratigraphic relation of)

**MD** presented his HW.

The examples were considered OK in terms of content -they basically reprise the examples for AP11.1. However, the labels of the referred classes need to be reworked. They will be put to an e-vote. Details in the [appendix](#_Label_and_examples). The label is to be decided via e-vote too.

### Examples for AP14 justified (is justification of)

**MD** presented his HW. The examples need be reworked and put to an e-vote. The labels of its domain and range properties are not correct, and their form will depend on the decision reached in Issue 480; namely, Is D: AP13 or AP13.1?

In terms of how the example was formatted, the sig seemed to like it.

**HW**: MD to rework the examples, based on decision for [480](#_480:_AP14_justified).

### Superproperty of AP5 removed part or all of (was totally or partially removed by)

**Proposal**: make AP5 removed part or all of (was totally or partially removed by) isA P31 has modified (was modified by):

* AP5 [D: A1 Archaeological Processing Unit, R: A8 Stratigraphic Unit]
  + A1 Archaeological Processing Unit isA: S4 Observation, S1 Matter Removal, **and** E12 Production (isA E11 Modification)
  + A8 Stratigraphic Unit (isA S20 Rigid Physical Feature isA E26 Physical Feature isA E18 Physical Thing)

Vote to accept CEO’s proposal

In favor: 5  
Against: 0

**Decision**: accepted.

### Example for AP12 confines (is confined by)

**CEO’s** HW:

* The Stratigraphic Interface “[19]” (A3) *confines* the Stratigraphic Volume Unit “(2)” (A2) [in Figure 4]

“Figure 4” refers to the Introduction of CRMarchaeo.

Vote to accept the example:  
In favor: 5  
Against: 0

**Decision**: accepted

## APPENDIX

### 474: Editorial Check of CRMarchaeo

#### Scope notes of AP25 occurs during (includes) and AP26 overlaps in time with (is overlapped in time by)

The scope note of AP25 occurs during (includes) changed

##### FROM (original)

**AP25 occurs during (includes)**

Domain: [E2](#_E2_Temporal_Entity) Temporal Entity

Range: [E2](#_E2_Temporal_Entity) Temporal Entity

Subproperty of: [E2](#_E2_Temporal_Entity) Temporal Entity.[P185](#_P185_ends_before) ends before the end of (ends after the end of):[E2](#_E2_Temporal_Entity) Temporal Entity

Quantification: many to many (0,n:0,n)

Scope note: This property identifies a situation in which the entire instance of E52 Time-Span of an instance of E2 Temporal Entity is within the instance of E52 Time-Span of another instance of E2 Temporal Entity that starts before and ends after the included temporal entity.

This property is only necessary if the time span is unknown (otherwise the relationship can be calculated). This property is the same as the "during / includes" relationships of Allen’s temporal logic (Allen, 1983, pp. 832-843).

This property is transitive.

Example: Middle Saxon period (E4) *occurs during* Saxon period (E4)

In First Order Logic:

AP25(x,y) ⊃ E2(x)

AP25(x,y) ⊃ E2(y)

AP25(x,y) ⊃ P185(x,y)

##### TO (revised)

**AP25 occurs during (includes)**

Domain: [E2](#_E2_Temporal_Entity) Temporal Entity

Range: [E2](#_E2_Temporal_Entity) Temporal Entity

Subproperty of: [E2](#_E2_Temporal_Entity) Temporal Entity.[P176](#_P176_starts_before) starts before the start of (starts after the start of): [E2](#_E2_Temporal_Entity)Temporal Entity   
[E2](#_E2_Temporal_Entity) Temporal Entity.[P185](#_P185_ends_before) ends before the end of (ends after the end of):[E2](#_E2_Temporal_Entity) Temporal Entity

Quantification: many to many (0,n:0,n)

Scope note: This property identifies the situation in which the entire temporal extent of an instance of E2 Temporal Entity is within the temporal extent of another instance of E2 Temporal Entity that starts before and ends after the included temporal entity.

This property is only necessary if the time span is unknown (otherwise the relationship can be calculated). This property is the same as the "during / includes" relationships of Allen’s temporal logic (Allen, 1983, pp. 832-843).

This property is transitive.

Example: Middle Saxon period (E4) *occurs during* Saxon period (E4)

In First Order Logic:

AP25(x,y) ⊃ E2(x)

AP25(x,y) ⊃ E2(y)

AP25(x,y) ⊃ P185(x,y)

The scope note of AP26 overlaps in time with (is overlapped in time by) changed

##### FROM (original)

**AP26 overlaps in time with (is overlapped in time by)**

Domain: [E2](#_E2_Temporal_Entity) Temporal Entity

Range: [E2](#_E2_Temporal_Entity) Temporal Entity

Subproperty of: [E2](#_E2_Temporal_Entity) Temporal Entity.[P176](#_P176_starts_before) starts before the start of (starts after the start of): [E2](#_E2_Temporal_Entity)Temporal Entity [E2](#_E2_Temporal_Entity) Temporal Entity.[P185](#_P185_ends_before) ends before the end of (ends after the end of):[E2](#_E2_Temporal_Entity) Temporal Entity

Quantification: many to many (0,n:0,n)

Scope note: This property identifies a situation in which there is an overlap between the instances of E52 Time-Span of two instances of E2 Temporal Entity.

It implies a temporal order between the two entities: if A overlaps in time B, then A must start before B, and B must end after A. This property is only necessary if the relevant time spans are unknown (otherwise the relationship can be calculated).

This property is the same as the "overlaps / overlapped-by" relationships of Allen’s temporal logic (Allen, 1983, pp. 832-843).

Example: the Iron Age (E4) *overlaps in time with* the Roman period (E4)

In First Order Logic:

AP26(x,y) ⊃ E2(x)

AP26(x,y) ⊃ E2(y)

AP26(x,y) ⊃ P176(x,y)

AP26(x,y) ⊃ P185(x,y)

##### TO (revised)

**AP26 overlaps in time with (is overlapped in time by)**

Domain: [E2](#_E2_Temporal_Entity) Temporal Entity

Range: [E2](#_E2_Temporal_Entity) Temporal Entity

Subproperty of: [E2](#_E2_Temporal_Entity) Temporal Entity.[P176](#_P176_starts_before) starts before the start of (starts after the start of): [E2](#_E2_Temporal_Entity)Temporal Entity

[E2](#_E2_Temporal_Entity) Temporal Entity.[P185](#_P185_ends_before) ends before the end of (ends after the end of):[E2](#_E2_Temporal_Entity) Temporal Entity

Quantification: many to many (0,n:0,n)

Scope note: This property identifies a situation in which there is an overlap between the temporal extents of two instances of E2 Temporal Entity.

It implies a temporal order between the two entities: if A overlaps in time B, then A must start before B, and B must end after A. This property is only necessary if the relevant time spans are unknown (otherwise the relationship can be calculated).

This property is the same as the "overlaps / overlapped-by" relationships of Allen’s temporal logic (Allen, 1983, pp. 832-843).

Example: the Iron Age (E4) *overlaps in time with* the Roman period (E4)

In First Order Logic:

AP26(x,y) ⊃ E2(x)

AP26(x,y) ⊃ E2(y)

AP26(x,y) ⊃ P176(x,y)

AP26(x,y) ⊃ P185(x,y)

#### Scope-note of AP7 produced (was produced by)

The scope note changed

##### FROM (original)

**AP7 produced (was produced by)**

Domain: [A4](#_A4_Stratigraphic_Genesis) Stratigraphic Genesis

Range: [A8](#_A8_Stratigraphic_Unit) Stratigraphic Unit

Subproperty of: [O17](#_O17_generated_(was) generated

Quantification: one to many (0,n:0,1)

Scope note: This property identifies the A8 Stratigraphic Unit that was produced during an A4 Stratigraphic Genesis Event.

Examples:

The layers of pumice and volcanic ash, about one metre thick, covering the ancient city of Akrotiri (A8) *was produced by* the explosion of the ancient Santorini’s volcano (A4) (see Fig. 5, 8).

In First Order Logic:

AP7(x,y) ⊃ A4(x)

AP7(x,y) ⊃ A8(y)

AP7(x,y) ⊃ O17(y)

##### TO (revised)

**AP7 produced (was produced by)**

Domain: [A4](#_A4_Stratigraphic_Genesis) Stratigraphic Genesis

Range: [A8](#_A8_Stratigraphic_Unit) Stratigraphic Unit

Subproperty of: [O17](#_O17_generated_(was) generated

Quantification: one to many (0,n:0,1)

Scope note: This property identifies an instance of A8 Stratigraphic Unit that was produced by an instance of A4 Stratigraphic Genesis. One instance of A4 Stratigraphic Genesis may produce more than one instance of A8 Stratigraphic Unit.

Examples:

The Thera eruption (ca. 1600BCE) (A4) produced layers of pumice and volcanic ash that covered the ancient city of Akrotiri (A8) [see Fig.5, 8] (Doumas, 2015).

In First Order Logic:

AP7(x,y) ⊃ A4(x)

AP7(x,y) ⊃ A8(y)

AP7(x,y) ⊃ O17(y)

###### Work cited:

**(Doumas, 2015)**

Doumas, C. (2015). “The Bronze Age on Thera”, in *Akrotiri, Thera, 17th century BC, A cosmopolitan harbour town 3,500 years ago*. Paris, 30 October 2013. Edited by Society for the promotion of studies on prehistoric Thera, pp. 6-26, pl. 1.24. Athens: Kathimerini S.A

#### AP9 took matter from (provided matter to) -missing scope note

The definition of AP9 changed

##### FROM (original)

**AP9 took matter from (provided matter to)**

Domain: [A4](#_A4_Stratigraphic_Genesis) Stratigraphic Genesis

Range: [S10](#_S10_Material_Substantial) Material Substantial

Superproperty of: [O18](#_O18_altered_(was) altered (was altered by)

Quantification: one to many (0,n:0,1)

Scope note: The slabs from the collapse of the upper storey’s paved floor of Room 5 of West House in ancient Akrotiri (S10) *provided matter to* the formation of two slab deposit layers on the ground floor (A4).

Example:

In First Order Logic:

AP9(x,y) ⊃ A4(x)

AP9(x,y) ⊃ S10(y)

AP9(x,y) ⊃ O18(x,y)

##### TO (revised)

**AP9 took matter from (provided matter to)**

Domain: [A4](#_A4_Stratigraphic_Genesis) Stratigraphic Genesis

Range: [S10](#_S10_Material_Substantial) Material Substantial

Subproperty of: [O18](#_O18_altered_(was) altered (was altered by)

Quantification: one to many (0,n:0,1)

Scope note: This property associates an instance of A4 Stratigraphic Genesis with an instance of S10 Material Substantial, from which matter was incorporated in the instance of A8 Stratigraphic Unit produced by this genesis.

The instance of A8 Stratigraphic Unit produced by an instance of A4 Stratigraphic Genesis can be documented by using the property *AP7 produced (was produced by)* and should be distinct from the instance of S10 Material Substantial from which matter was taken. The latter instance will be modified or cease to exist due to this genesis process.

Example: The formation of two slab deposit layers on the ground floor of Room 5 of the West House in ancient Akrotiri (A4) *took matter from* The slabs of the collapsed upper storey’s paved floor (Michailidou, 2001; 68-70)

In First Order Logic:

AP9(x,y) ⊃ A4(x)

AP9(x,y) ⊃ S10(y)

AP9(x,y) ⊃ O18(x,y)

###### Work cited:

(Michailidou 2001): Michailidou, A. (2001). *Akrotiri Thiras. I meleti ton orofon sta ktiria tou ikismou*. BAE 212, Athina: I En Athines Archaeologiki Eteria.

#### Scope-note of AP11 has physical relation (is physical relation of)

The definition of AP11 changed

##### FROM (original)

**AP11 has physical relation (is physical relation of)**

Domain: [A8](#_A8_Stratigraphic_Unit) Stratigraphic Unit

Range: [A8](#_A8_Stratigraphic_Unit) Stratigraphic Unit

Quantification: one to many (0,n:0,1)

Scope note: This property identifies the physical relationship between two A8 Stratigraphic Units. The type of physical relationships found between stratigraphic units in archaeological documentation is documented through the property AP 11.1 has type

Example The layer of burned remains of the log building (in Søndre gate, Trondheim, Norway) (A8) *has physical relation (is physical relation of) under* the foundation of the church of St. Clements (A8).

In First Order Logic:

AP11(x,y) ⊃ A8(x)

AP11(x,y) ⊃ A8 (y)

AP11.1 (x,y,z) ⊃ [AP11 (x,y) ∧ E55(z)]

Properties: AP11.1 has type: [E55](#_E55_Type) Type

##### TO (revised)

**AP11 has physical relation to (is physically related from)**

Domain: [A8](#_A8_Stratigraphic_Unit) Stratigraphic Unit

Range: [A8](#_A8_Stratigraphic_Unit) Stratigraphic Unit

Quantification: many to many (0,n:0,n)

Scope note: This property identifies the physical relationship between two A8 Stratigraphic Units. The described relationship may be between two adjacent instances of A2 Stratigraphic Volume Unit sharing a common interface (instance of A3 Stratigraphic Interface), between an instance of A2 Stratigraphic Volume Unit and one of its adjacent interfaces, such as human-made cuts or earthquake induced faults, or even between two intersecting interfaces.

The type of physical relationships found between stratigraphic units in archaeological or geological documentation is documented through the property AP 11.1 has type. The type applies to the direction from the domain to the range of the property *AP11 has physical relation to (is physically related from).* The type of physical relationship typically constitutes strong evidence for the sequence of genesis of the related stratigraphic units, which can be documented by the property AP13 *has stratigraphic relation to (is stratigraphically related by).* The type may either pertain to a relative topology, such as the one being “under” the other, or to the fine-structure of the interface between them, such as a layer of concrete having filled out earlier micro-cavities in various directions in the interface before solidifying.

Example The layer of burned remains of the log building (in Søndre gate, Trondheim, Norway) (A8) *has physical relation (is physical relation of) under* the foundation of the church of St. Clements (A8).

The floors at B of the building 1 in Çatalhöyük, Turkey (A8) *has physical relation to* wall C (A8) *has type* runs up to (E55) [as observed initially] (Hodder 1999)

The wall C of the building 1 in Çatalhöyük, Turkey (A8) *has physical relation to* the floors at B (A8) *has type* inserted by cut (E55) [as observed finally] (Hodder 1999)

The wall C of the building 1 in Çatalhöyük, Turkey (A8) *has physical relation to* wall D (A8) *has type* abuts on (E55). (Hodder 1999)

The wall D of the building 1 in Çatalhöyük, Turkey (A8) *has physical relation to* the floors B’ (A8) *has type* on top of (E55). (Hodder 1999)

In First Order Logic:

AP11(x,y) ⊃ A8(x)

AP11(x,y) ⊃ A8 (y)

AP11.1 (x,y,z) ⊃ [AP11 (x,y) ∧ E55(z)]

Properties: AP11.1 has type: [E55](#_E55_Type) Type

###### Work cited:

Hodder, I. (1999). The Archaeological Process: An Introduction. Blackwell Publishers, Oxford, UK., pp. 40-2.

#### Label and examples for AP13 has stratigraphic relation (is stratigraphic relation of) & AP13.1 has type: E55 Type

**Examples set**: the labels of the referred classes need to be checked and put to an e-vote. The forward going property is changed to **AP13 has stratigraphic relation** **to**, the label of the inverse to be discussed in a separate issue -together with AP11i because the pose the same kind of problem.

* The production of the floors at B of the building 1 in Çatalhöyük, Turkey (E12) *has stratigraphic relation to* the production of wall C (E12) *has type* after (E55). [as observed initially, see AP11] (Hodder 1999)
* The production of wall C of the building 1 in Çatalhöyük, Turkey (A5) *has stratigraphic relation* *to* the production of the floors at B (A5) *has type* after (E55). [as observed finally, see AP11] (Hodder 1999)
* The production of the wall C of the building 1 in Çatalhöyük, Turkey (A5) *has stratigraphic relation* *to* the production of wall D (A5) *has type* after (E55). [See AP11] (Hodder 1999)
* The production of the wall D of the building 1 in Çatalhöyük, Turkey (A5) *has stratigraphic relation* *to* the production of the floors B’ (A5) *has type* after (E55). [See AP11] (Hodder 1999)